Twelve Tone Series -- The Matrix

Choose one *NON*-transposing instrument. Compose a four-measure piece for piano and this non-transposing instrument, based on a Matrix generated from your own original twelve-tone row. Create thick texture and be especially aware of formal structure. Correctly score and analyze your piece, indicating clearly every use of a row [P, I, R, RI and transposition] or portion thereof.

Grading:

1. Row construction – avoidance of thirds	10
2. Correct construction of Matrix (submit your matrix)	10
3. Correct use of Matrix	10
4. Idiomatic use of the piano	10
5. Form – use of the row, specific focal point	10
6. Melodic and rhythmic interest	10
7. Thick Texture (stack up the notes in the row)	10
8. Manuscripting	10
9. Editing and articulation	10
10. Analysis	10

Arnold Schoenberg

9

MY BLIND ALLEY

June 23, 1926

The young composers find my way a blind alley. There is an implicit reproach here—that once, in the days before they knew any better than to copy me blatantly, I sold (or rather gave) them a pig in a poky blind-alley. Measures are needed to stop any more aspiring composers from following me down my blind alley, so I am henceforth shutting off the entry to it with a row of twelve tones. Now they can keep moving round the circle of fifths and need not fear that one of my fundamentals will ever force its way through to them. And vice versa. If now and then they should wonder what the old chap down the blind alley is cooking up, they will find the row standing shoulder-to-shoulder against them. Unauthorized Persons will always find a way in, however – who could stop them?

All the same, until now I always felt more inclined toward a desert island than a blind alley. But since solitude is common to both, I prefer the blind alley of knowing my spiritual property to be common property, even though my participation in the common weal causes me still less emotion than the ending of my solitude would cause me discomfort.

So, back to tonality! (It used to be an artistic means whose advantages I knew how to exploit.) For the young, it is a carousel – why should they not enjoy it? A ride is even cheaper than the pleasure it affords. Grown-ups are admitted, too, and the onlooker also has fun. The young hold the floor, the future is theirs. Who, given a chance in life's carnival, would not prefer a carousel to a blind alley? I never dissuaded anyone from tonality; rather I warned them against the blind alley, which is not for those who want to go round in circles. Nowadays, it is 'après-moi le cul-de-sac'. I blundered into it and shall patiently wait there until my last breath – the breath that still supplies the wind for their miserable carousels. The breakthrough will come no sooner than that!

CHAPTER XIV

The Twelve-Tone Technique

The *twelve-tone* or *tone row* technique is one of the most significant innovations of the twentieth century. The materials and methods of other contemporary styles, except for the most recent and radical, are largely extensions and modifications of previous practices, but the row technique introduces procedures which are essentially new. Links with the past are not totally lacking, but elements with no direct antecedents predominate. This style was not, however, conceived as a revolt against tradition but rather as a means of organizing and systematizing tendencies already prevalent in music. These tendencies created certain problems for which the twelve-tone technique was proposed as a solution. Its formulation as a method of composition more than any other concept of comparable scope was the work of a single artistic mind, that of Arnold Schoenberg. This achievement alone would merit his position as one of the creative geniuses of our age.

The eventual position of the row technique in music remains to be seen. The perspective of roughly half a century is inadequate for a final judgment, but its impact on twentieth century music is enormous and mounting. Many contemporaries employ this method of composition exclusively, and none are free of its influence. For this reason knowledge of the methods and objectives of row composing is valuable not only in comprehending the music resulting directly from this system, but of contemporary music in general. This chapter aims to foster understanding by developing a working knowledge of the method. Those interested in pursuing the study further will find available several books and articles which deal exclusively and exhaustively with the subject.*

*See Suggested Assignment 1 at the end of this chapter.

To understand the twelve-tone technique one must first understand the situation which engendered it. Early in the century musical materials were expanded to the point where the foundations of conventional tonal organization (tonality, scales, and root progressions) were being shaken. Several of the contributing factors have been examined in previous chapters.

Some composers were content to extend the resources within recognizable limits which preserved essential structural functions. The concept of tonality could be broadened without being lost. Extensive chromaticism and the substitution of modal and synthetic scales for major and minor would not necessarily dissipate the values of selective scales. Increasingly complex sonorities could be introduced, and chord roots could move freely without becoming unintelligible. Within these boundaries traditional methods of organizing tonal materials were adequate.

Other composers were inclined to traverse these boundaries in the pursuit of tonal relationships without tonality, not based on selective scales, using tonal aggregates indescribable in conventional terms, and dissonance almost to the exclusion of consonance. Under these circumstances conventional methods of tonal organization cease to function. To replace them Schoenberg devised a procedure he called *A Method of Composing with Twelve Tones which Are Related only with One Another*. This is the system commonly referred to as the *twelve-tone, note series*, or *tone row* technique.

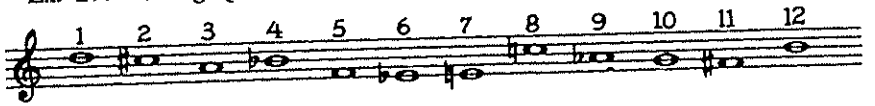
Formation of the Series

Essentially, the system consists of setting up a sequence of the twelve notes of the chromatic scale and repeating them in a fixed order constantly and exclusively throughout a composition. Twelve different notes are used, and none is repeated. The crux of the series lies in the order of tones and the intervals between them. The twelve tones in their fixed order are known collectively as the *series, row, set*, or *Grundgestalt*. Isolated, the series usually is represented in notes of equal value with a limited compass. The first version is designated as the *original form* or *basic set* to distinguish it from subsequent modifications.

There are no definite rules regarding the construction of the series, but a few principles beyond the requirements of using all twelve tones with no repetitions generally are observed. Music in the row technique is by nature atonal, and suggestions of tonality in the series are foreign to the style. Adherence to the order of the series assures equal use of all tones and minimizes the possibility of any note, because of emphasis, asserting itself as a tonic.

Variety in interval relationships is desirable. Examples 277 and 278 are typical, each with five different intervals. These intervals and their inversions, available through octave transposition of one of the tones, comprise eight of the eleven possible. In Example 277 the tritone, the minor third, and its inversion are missing. In Example 278 the tritone, the major second, and its inversion are missing.

Ex. 277 String Quartet No. 4 *Schoenberg*



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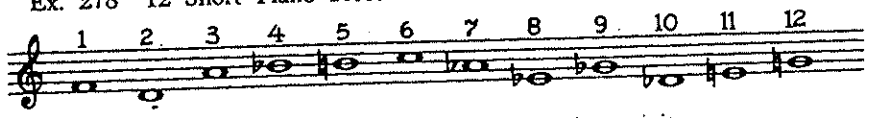
Ex. 278 12 Short Piano Pieces *Krenek*



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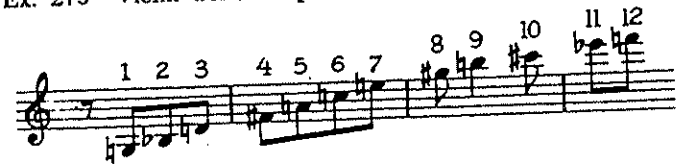
The possibilities for series formations are almost infinite. For max imum variety, all eleven intervals can be incorporated in the series though half will be inversions of the other half. More often, for adde unity, characteristic interval relationships are repeated, as in Exampl 277. In this series, notes 8-9-10 are a retrograde inversion of notes 1-2- transposed. Notes 10-11-12 are a transposed mirror of notes 3-4-5.

Example 279 also has repetitions of characteristic interval relatior ships. The series is shown as it occurs in the solo violin part. It has onl thirds and major seconds, one spelled enharmonically as a diminishe third. Enharmonic spellings are used freely since equally tempered tu ing is taken for granted. Of the first nine notes in the example, any co secutive three form a triad. Each type—major, minor, augmented, ar diminished—is represented, and all but the diminished is repeated.

Ex. 279 Violin Concerto p4 *Berg*



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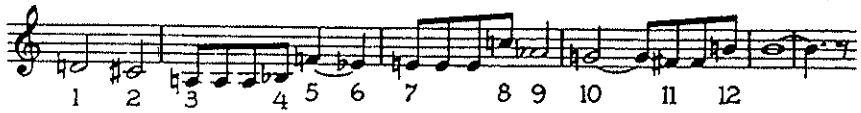
Twelve-tone Lines

Theoretically, themes with all twelve tones and no repetitions should be conceived spontaneously, but this would be very unlikely for anyone not thoroughly conditioned in the system. Invariably with students, the row is worked out first and the characteristic shape and rhythm of the theme is derived later. The row itself is not a theme, though it is the source of all thematic material. Before becoming a theme, it must have a distinctive rhythm and contour. In evolving a theme from the series, certain liberties are customary. Notes may be used in any octave and repeated freely as long as their position in the order is not disturbed. Example 280 is based on the series of Example 277.

Ex. 280 String Quartet No. 4 p1 *Schoenberg*



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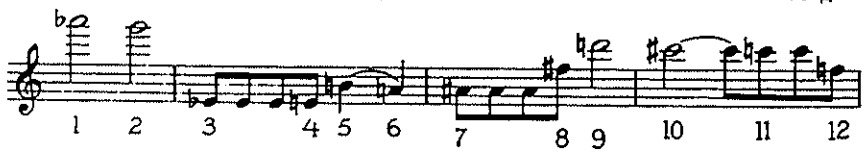
The series may be transposed to any degree of the chromatic scale. Example 281 is based on the same series as Example 280 transposed a diminished fifth. The rhythm is identical, but different octave transpositions are used.

Ex. 281 String Quartet No. 4 p18 *Schoenberg*



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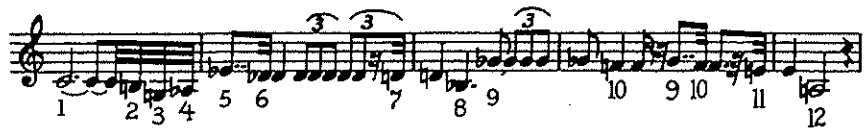
Example 282 is a different theme derived from still another transposition of the same series. It also illustrates an additional type of permissible repetition, that of a small fragment. G-flat and F, notes 9 and 10 of the series in this transposition, are repeated before notes 11 and 12 appear. This procedure is common. Repetitions of small figures and patterns which can be perceived as such are used freely in the same manner as repeated notes. This also applies in trills, tremolo, accompanying and embellishing figures.

Ex. 282 String Quartet No. 4 p63 *Schoenberg*



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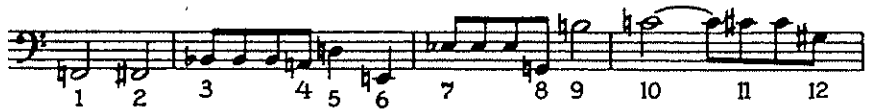
In addition to transposition, all the methods of systematically modifying the contour of themes and motives are applied also to the series The use of it in the original form and in inversion, retrograde, and retrograde inversion is part of the fundamental concept of the method. With the twelve transpositions of each of these four basic shapes, forty-eight versions exist for each series.

Example 283 comes from a transposition and interval inversion of the row given in Example 277 and used in Examples 280-282. Using the same rhythmic pattern as Examples 280 and 281, Example 283 illustrates the principle of *isorhythm*, that is, repeating a rhythmic pattern with a different contour. Isorhythm is common in twelve-tone compositions.

Ex. 283 String Quartet No. 4 p10 *Schoenberg*



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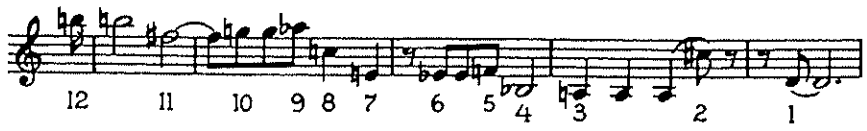
The retrograde form of the same row is the basis for Example 284. It has rhythmic features of the previous examples, but does not repeat the entire pattern.

Ex. 284 String Quartet No. 4 p1 *Schoenberg*



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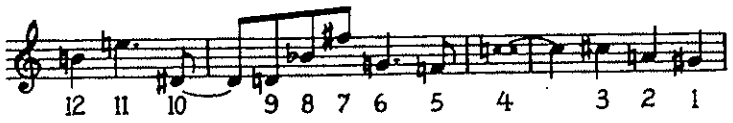
Example 285 is a rhythmically independent theme derived from the retrograde inversion of the Example 277 series.

Ex. 285 String Quartet No. 4 p30 *Schoenberg*



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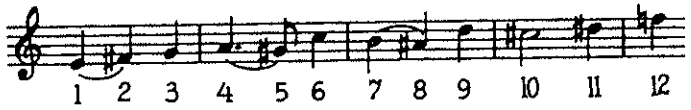
Twelve-tone melodies are found occasionally in the works of composers who do not use the technique customarily. Example 286 is from an isolated instance where Bloch employed the system. The line, in spite of its twelve tones, is not without tonal implications.

Ex. 286 Sinfonia Breve p27 *Bloch*



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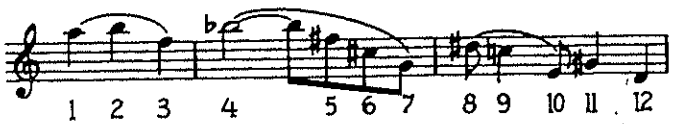
Bartok does not use the twelve-tone method in his *Violin Concerto*, but it has a theme with all the notes and no repetitions.

Ex. 287 Violin Concerto p12 *Bartok*



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Twelve-tone Texture

The foregoing examples demonstrate the application of the twelve tone method to the formation of single lines. In strict twelve-tone composition, not just the thematic material, but the entire texture is derive from the series. Twelve-tone composition is primarily a contrapunta procedure, and as such, attention is focused on the construction an combination of lines. Very free vertical associations compensate some what for the strict adherence to the order of the series in all part Sonority, as a phenomenon independent of linear combinations, is of s little importance in the style, principles of harmonic structure and pr gression are not given by its theorists, nor are harmonic formulas d tectable in the compositions.

Harmonies, in the sense of vertical sounds, consist of any combin tion of any number of notes. The choice is largely determined by tl order of the series, though considerable flexibility is possible in spa ing. Clusters and congestions generally are avoided. Sharp dissonanc usually are spaced in a manner which emphasizes their resonance ar minimizes their harshness, except for special effects. Octave doubli and unisons, with few exceptions, are not used in the style. Conve tional consonant chords occur but rarely and are permitted only wh they have little connotation of tonality. The vertical sounds stem fro the series, but the series can be manipulated to produce almost any d sired sonority. Some series are constructed with a view to the harmon effect of certain groups of consecutive notes.

Though sonority is a secondary consideration, it is not ignored l composers in the style. Climactic points in the form and in the lines a associated with increased tension in the vertical structure. Harmonic te sion is related to dissonance, but the two cannot be considered synon mous. Other factors, such as spacing, scoring, dynamics, rhythm, a tempo, also influence tension.

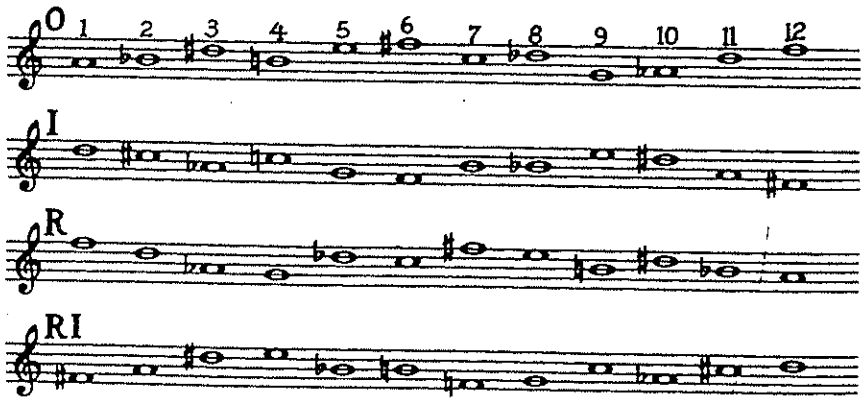
The degree of dissonance can be reckoned roughly by the numb and kind of dissonant intervals comprised between all component par Seconds and sevenths are dissonant. Minor seconds and major sevent are more dissonant than major seconds and minor sevenths. Perf fourths are consonant or dissonant depending upon the context. In co bination with other intervals their effect usually is that of a consonan Tritones are dissonant, but in atonal music they do not demand the p scribed resolution associated with them in tonal music. The other int vals are consonant.

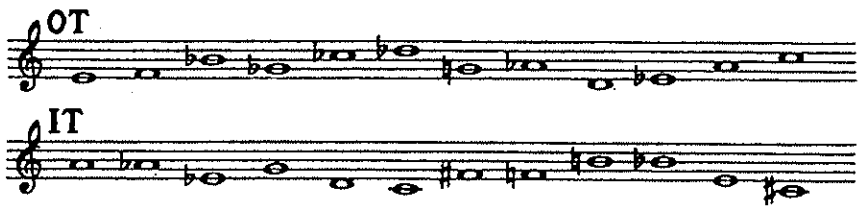
In music of more than one part, there are several ways of deriving the material of the various parts from the basic series. The notes of one form of the series may be distributed between all the parts. Or, each part may have its own form of the series, in which case two or more forms of the series will progress concurrently. When more than one form of the series is in progress, the notes of the various forms may be exchanged between the different voices. It is not a requirement to complete a series in the same part. Notes from a series may be used simultaneously to make chords. The vertical arrangement of chords so formed is not determined by the order of the series. Chord tones may be distributed in any order from top to bottom without violating the required sequence.

These generalizations are oversimplified, and exceptions are to be found. They are, however, adequately valid to serve as a guide for initiates in the style. The following analysis of excerpts from a mature work, the *Concerto for Violin op. 36*, by the originator of the method of composing with twelve tones provides added insight to its functions.

Example 288 gives the forms of the series used in Examples 289-291. The first line gives the basic set or original form (0). The next three lines are the inversion (I), retrograde (R), and retrograde inversion (RI) respectively at the pitch of their initial appearance in the concerto. The last two lines give the original and inverted forms of the series transposed to the pitches used in the second movement (OT and IT). In the analysis of Examples 289-291, the notes of all forms of the series are numbered consecutively from 1 to 12, unlike the previous examples in which the retrograde forms were numbered in reverse order.

Ex. 288 Violin Concerto *Schoenberg*





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The complete series is stated in its original form in the upbeat and the first three measures of Example 289, distributed between the solo and the accompaniment. The minor seconds between 1-2 and 7-8 are set sequentially with the same rhythm. The other notes of the series used in pairs provide the accompaniment. The intervals between 9-10 and 11-12 are repeated alternately in a fashion characteristic of this passage.

The inverted form of the series starting on D is the basis of measures 4-7. This series is constructed in such a way that the inversion of the first six notes starting on D does not duplicate any of the first six notes of the original starting on A. Consequently, there is no duplication between the last six notes of these two forms of the series, either. The violin uses the same notes from this form of the series as from the previous one with a similar rhythm producing a free mirror of the line.

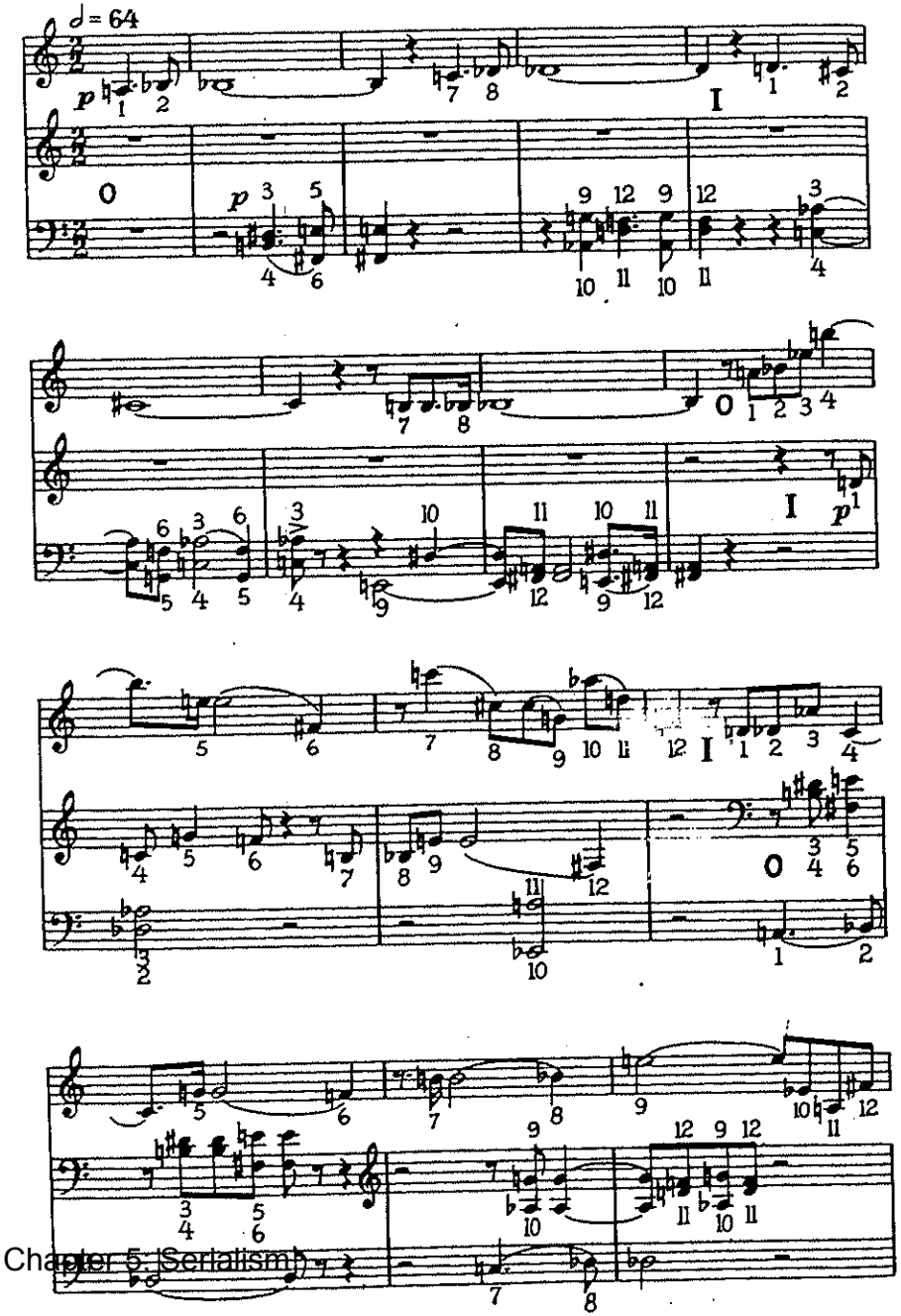
In measures 8-11 the full series in its original form appears in the solo part. This appearance establishes the order of the tones, since it is not possible in the prior statements to determine which of two notes sounding together comes first. This original form in the violin is accompanied by the inverted form.

Starting in measure 11 the solo and accompaniment exchange forms of the series. Using the first six notes of the inversion, the violin repeats the rhythm used with the previous original form. This inversion in the solo is accompanied by the material of measures 1-4, rhythmically compressed and with some additional repetitions of intervals. The solo line of the opening is now in the bass.

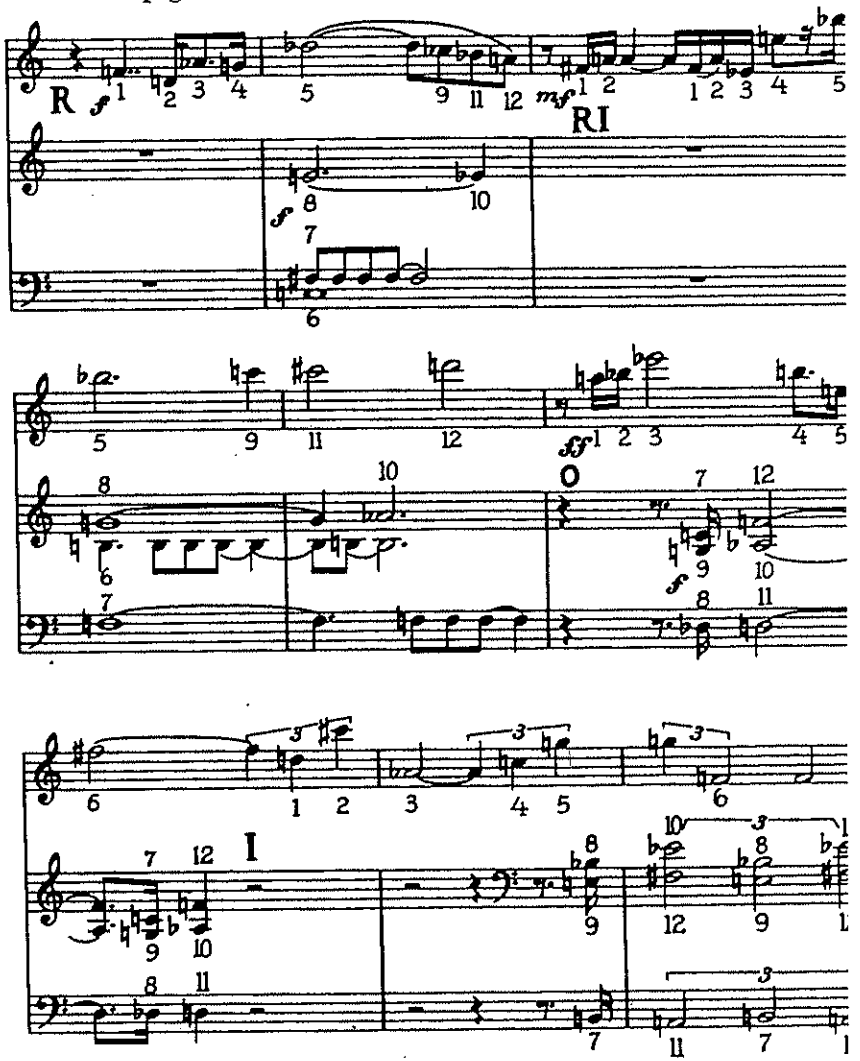
The retrograde form of the series first appears starting in measure 15. Distributed between the parts, it is completed in measure 16. The retrograde inversion follows immediately, also distributed between the parts.

The original form reappears in measure 20. In this statement the first six notes in the melody are accompanied by two three-note chords using the remaining six notes. The same procedure is repeated starting in measure 21 using the inversion of the series.

Ex. 289 Violin Concerto p3 *Schoenberg*



Ex. 289 page 2



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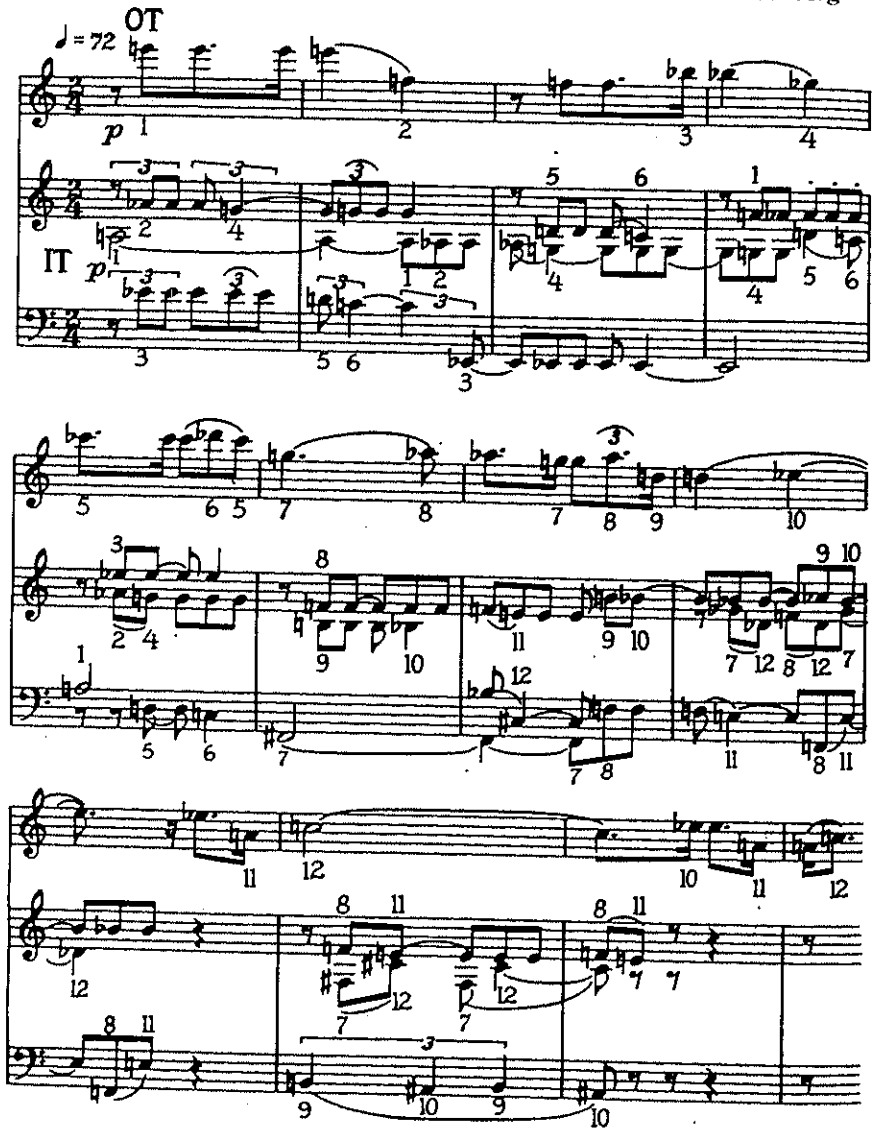
Example 290 is from the beginning of the second movement of t Schoenberg *Violin Concerto*. It uses the original and inverted forms the same series, both transposed down a perfect fourth. This paral the tonal practice of having second movements in a related key.

The series is treated somewhat more freely in this example, perh on the assumption that it is more familiar by this time. The statem

of the original form occupies the solo for twelve measures. The first six notes of the original are accompanied by the first six notes of the inversion, but the accompaniment goes through the first half of its series four times. Likewise, tones 7-12 of the original are accompanied by tones 7-12 of the inversion, with those of the inversion repeated five times.

Ex. 290 Violin Concerto p29 *Schoenberg*



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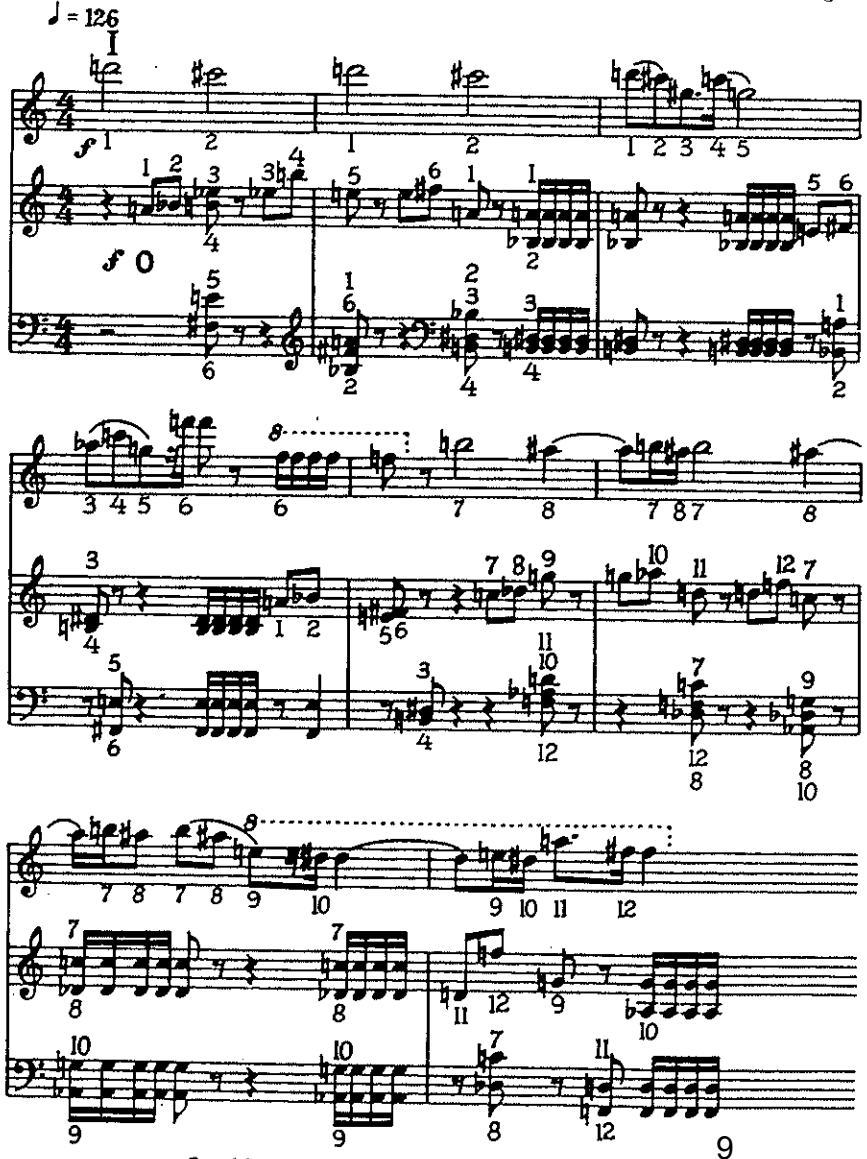
Example 291 is the beginning of the *Finale* of the same work, using the inverted and original forms of the series untransposed. This also parallels conventional key relationship in tonal music. The procedure is very similar to that in the second movement. In this case five repetitions of the first half and four repetitions of the second half of the original

Ex. 291 Violin Concerto p45 *Schoenberg*



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accompany a single extended statement of the inversion in the solo. The four-note chords in the accompaniment are good examples of the vertical arrangement of the series tones.

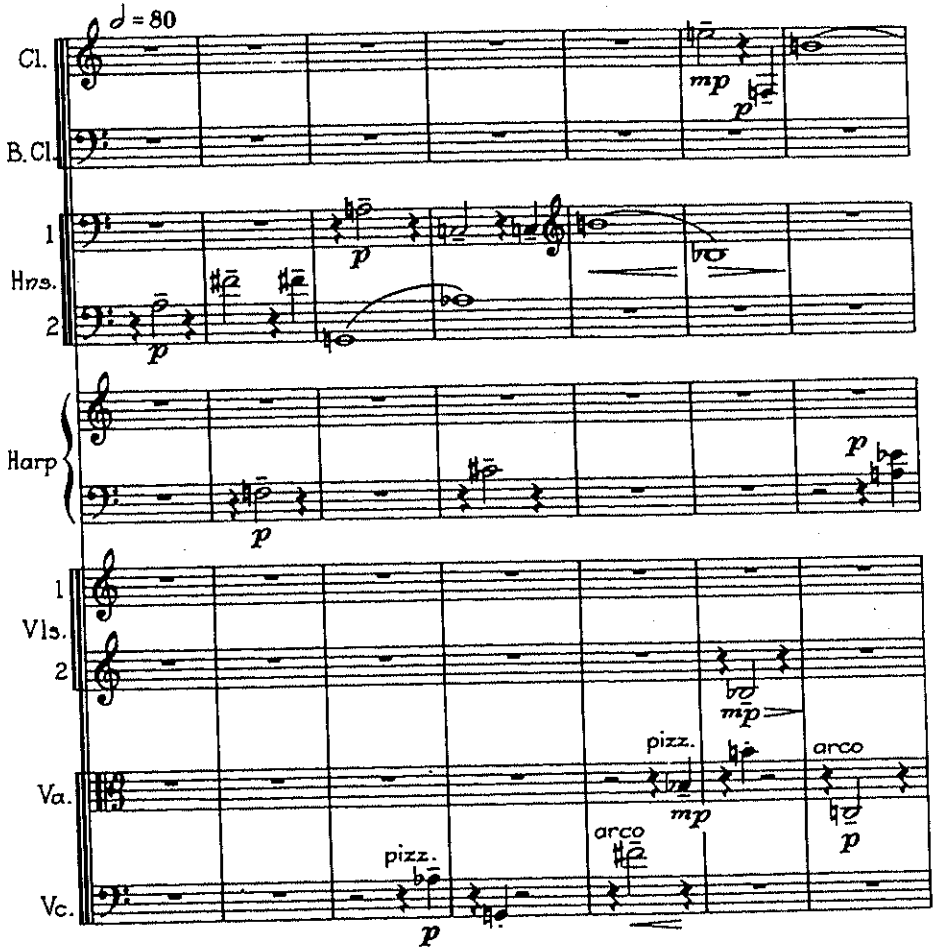
Anton Webern, who was a student of Schoenberg, applied the principles of serial composition in a very personal way. His style matured slowly over a period of years. It is characterized by extremely sparse texture and highly concentrated motivic structure. His works, which invariably are of short duration, create the impression of having been distilled to the point where only the barest essentials remain. He found the intimate mediums of musical expression most congenial and wrote extensively for voice accompanied by piano or a small group of instruments and for uniquely constituted chamber ensembles.

Example 292 is representative of Webern's mature style. The score showing the full instrumentation of his *Symphony Op. 21* is necessary to convey an impresssion of the writing and scoring, which are inseparable in Webern. The discontinuity with more rests than notes, the angularity of the lines with wide leaps spanning dissonant intervals, the pointillistic scattering of notes over the page, and the subdued dynamics are all typical. Full tuttis and fortissimos are hardly to be found in his scores. The technical procedures in Example 292 are also typical. Written strictly in the twelve-tone system, it shows the beginning of a four part canon in contrary motion. The distribution of the canonic lines between different instruments and registers provides additional insight to the style.

It is too soon to pronounce definitive rules for composing with twelve tones, and there are not yet enough works applying the principles in the same way to prescribe universally acceptable common practices. Webern utilized Schoenberg's principles in a manner which produced significantly different results. Many of the younger composers—Karlheinz Stockhausen, Pierre Boulez, and Luigi Nono among them—appear to be directly influenced by Webern and only indirectly by Schoenberg. A new generation of twelve-tone composers is actively engaged in extending the system, especially in the direction of bringing other elements in addition to pitch under serial control, when it is not inventing more revolutionary means to supplant it.

After becoming familiar with the twelve-tone system and music written in it, each musician must make a subjective judgment of its merit just as each composer must decide what to apply, what to modify, and what to discard. Whether one decides to embrace or denounce the system, he will have good company. It has been praised as the only valid twentieth century idiom and condemned as an artistic blind alley already explored to the limits of its potential. Whatever the ultimate de-

Ex. 292 Symphony Op. 21 p1 *Webern*



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cision, every musician owes it to himself to know something about the method and to formulate his attitude only after acquiring an intimate knowledge of some music produced by it. A style originated by Schoenberg, adopted by Berg and Webern, and more recently practiced by such venerable composers as Stravinsky, Copland, and Sessions cannot be ignored.

Even those who reject the system for artistic expression find something of value in it as exercise material and as a way of acquiring skill in handling tonal relations uninhibited by tonality. It has been suggested

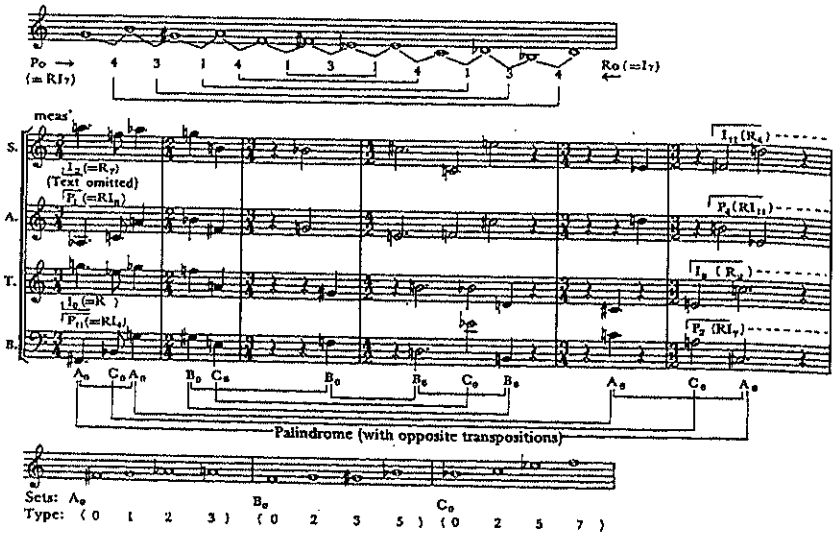
that some day studies in the twelve-tone method may supplant studies in conventional harmony and counterpoint. It may become a discipline used to develop a keen instinct for atonal music, functioning as traditional studies in music theory do now for tonal music. Before this happens, atonality will have to be assimilated as tonality has been in ages past. This is still in the future. The time may never come, or it may be nearer than we think. At this point, who is to say?

Suggested Assignments

1. Read sections of particular interest selected from the following:
   Krenek, Ernst. *Studies in Counterpoint* (G. Schirmer, Inc., New York, 1940).
   Leibowitz, Rene. *Schoenberg and His School* (Philosophical Library, New York, 1949).
   Perle, George. *Serial Composition and Atonality* (University of California Press, Berkeley and Los Angeles, 1962).
   Rufer, Josef. *Composition with Twelve Notes Related to One Another* (Rockliff, London, 1954).
2. Listen to the recording *Twelve-tone Composition* (narration and musical examples), Folkways Records FT3612.
3. Analyze in the manner of Examples 288-291 selected passages from works written in the twelve-tone system. The series usually is more readily traced in the compositions of Schoenberg than in those of his disciples.
4. Write some sample series using all twelve notes of the scale with no repetitions. Contour is of no importance, since octave transpositions will take care of this in the themes, but strive for interesting interval relationships. Experiment with symmetrical rows, that is, rows with patterns repeated in segments or in modified forms of the row, such as the inversion or retrograde.
5. Invent a series like the one in the Schoenberg *Violin Concerto* in which the inversion a fourth lower of the first six tones brings out the remaining six tones.
6. Select one of your series, and write several themes using it in the manner of Examples 280-285.
7. Using the same series, write an extended melody going through the series more than once. Strive for rhythmic interest, unity, and a good contour with logical climax points and cadences.

8. Using only the original form of the series, write a two part exercise, distributing the notes of the series between the two parts.
9. Write out the inversion, retrograde, and retrograde inversion of the same series and at least one transposition of each form.
10. Using any two forms of the series, write a two part counterpoint.
11. Observing the order of the series but using a form or forms of your choice, write an exercise which has vertical sonorities of three or more notes derived from the series.
12. Write a short composition employing the twelve-tone technique in any way you consider to be appropriate. Make an analysis as you compose.

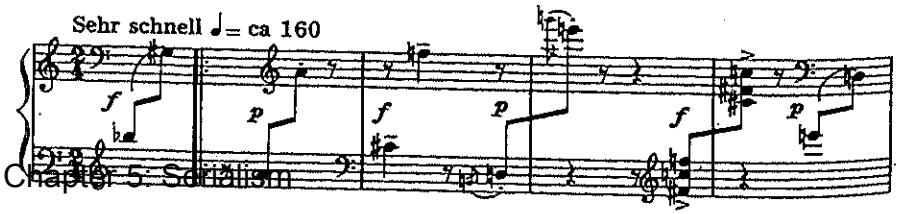
EXAMPLE 6-18. Webern: Cantata No. I, Op. 29 (1938–39), I, mm. 14–19. © 1954, Universal Edition. Used by permission of the publisher. Theodore Presser sole representative United States, Canada and Mexico.



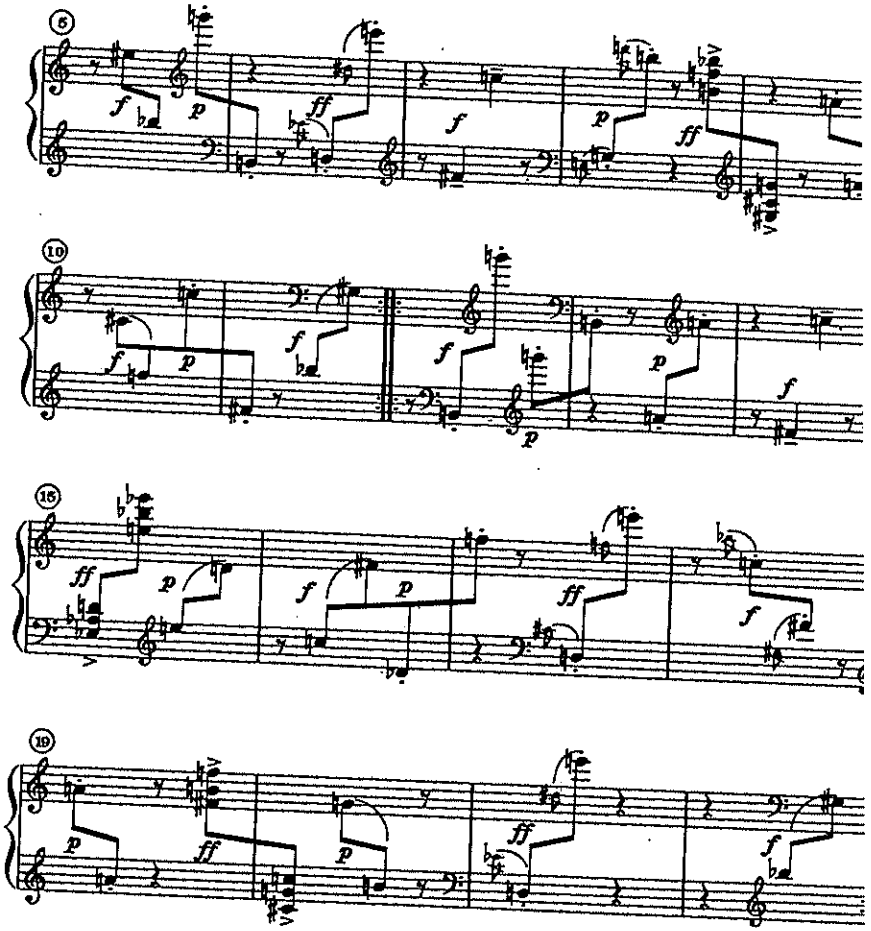
4.3 Polyphonic Details

In many works, particularly those by Webern and by composers influenced by his writing, the musical fabric is woven by elaborate and strict canons. In the example following, the two voices are in canon at the distance of an eighth note throughout. But here, as in most twelve-note works employing canons, the contrapuntal device itself is of secondary importance (from the standpoint of perception) to the unity created by the rhythmic and pitch details (these and other details of this movement are discussed in Sections 4.4 and 7.0 of this chapter).

EXAMPLE 6-19. Webern: Variations for Piano, Op. 27 (1936), II (complete). Copyright 1937, Universal Edition. Used by permission of the publisher. Theodore Presser Company sole representative United States, Canada and Mexico.

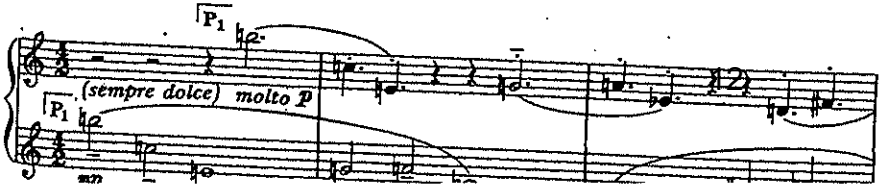


Chapter 5: Serialism

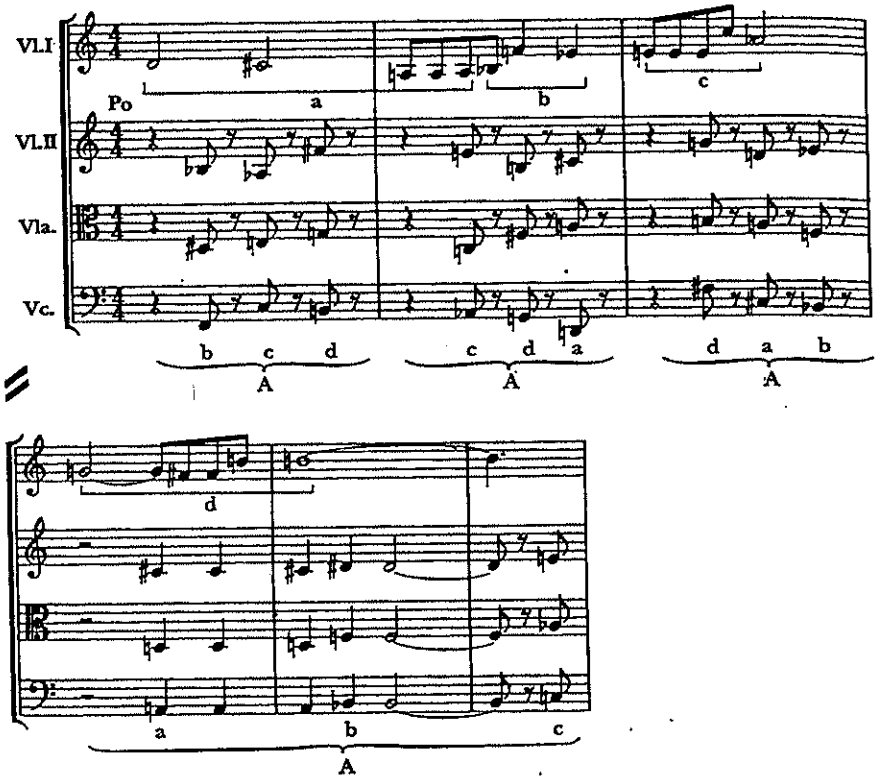


Another example of canonic treatment is found in the third piece from Dallapiccola's *Quaderno musicale*, entitled "Contrapunctus primus." This piece begins with a canon in quasi-diminution at the unison, using the P_1 form of the set (see Ex. 6-10 for the P_0 form).

EXAMPLE 6-20. Dallapiccola: *Quaderno musicale*, No. 3, "Contrapunctus primus" (complete). By permission of the Edizioni Suvini Zerboni, Milano.

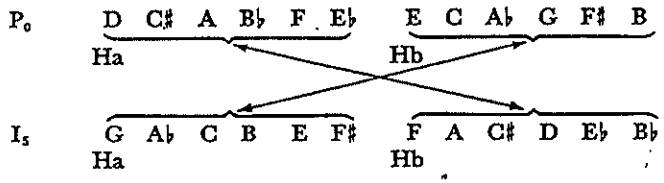


EXAMPLE 6-15. Schoenberg: String Quartet No. 4, I, mm. 1–6. Copyright 1937 by G Schirmer, Inc. Used by permission.



4.2 Combinatoriality

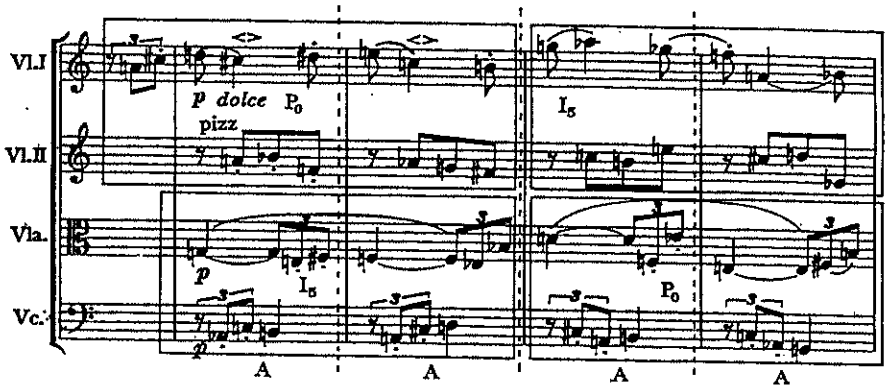
An important aspect of the vertical combinations of Schoenberg's Fourth Quartet and one of his contributions to twelve-note composition in general is combinatoriality. Consider the simultaneous combination of the P_0 and the I_5 forms of the set from this work:



The pitch class contents, though not the ordering, of the two hexachords (labelled *Ha* and *Hb*) are duplicated in opposite positions in the two forms. This allows control of the vertical space to the extent that these two forms (and

other similarly related P and I forms of this set, e.g., P_1/I_6) can be combined as shown without duplicating pitch classes. The vertical alignment thus produces two successive aggregates. Throughout the quartet combinatoriality of the type described is the primary basis for the association of set forms. An example from the second theme section of the first movement is given below in which four successive aggregates are shown. The two upper and the two lower instruments are paired to present the set forms.

EXAMPLE 6-16. Ibid., I, mm. 27–28. Copyright 1937 by G. Schirmer, Inc. Used by permission.



The type of combinatoriality found in this work is technically called *hexachordal inversional combinatoriality* and is common in Schoenberg's music beginning with his Variations for Orchestra, Op. 31 (1927–28). In addition to this type, there is also the type in which hexachords may be complemented under simple transposition. For example, given the hexachord (C D E F G A), transposition by tritone gives (F♯ G♯ A♯ B C♯ D♯). Further, this set is symmetrical and under RI_0 reproduces itself. When all three conditions (transposition, inversion with or without transposition, and inversional symmetry) are met by a single hexachord, *all-combinatoriality* results.[14]

There are six all-combinatorial hexachords, which along with their set types and the specific conditions under which they produce complementary hexachords are given in Table 1.

Each of the first three sets are called *first order all-combinatorial source sets.* These produce complements under one case of transposition and one case of

[14]The various types of combinatoriality and the conditions under which they arise are described by Milton Babbitt in his article "Set Structure as a Compositional Determinant," in the *Journal of Music Theory* V/1 (April, 1961), pp. 72–94. Combinatoriality resulting from transposition or inversion only is called *semi-combinatoriality.*

TABLE 1

	Set	*Type*	*Complements Produced Under*
1.	C C♯ D D♯ E F	(0 1 2 3 4 5)	T_6 and I_{11}
2.	C D D♯ E F G	(0 2 3 4 5 7)	T_6 and I_1
3.	C D E F G A	(0 2 4 5 7 9)	T_6 and I_3
4.	C C♯ D F♯ G G♯	(0 1 2 6 7 8)	$T_{3,9}$ and $I_{5,11}$
5.	C C♯ E F G♯ A	(0 1 4 5 8 9)	$T_{2,6,10}$ and $I_{3,7,11}$
6.	C D E F♯ G♯ A♯	(0 2 4 6 8 10)	$T_{1,3,5,7,9,11}$ and $I_{1,3,5,7,9,11}$

transposed inversion. The fourth set is a *second order* type and produces its complement under two cases of transposition and of transposed inversion, while the fifth set is complement producing under three instances of transposition and of transposed inversion and is a *third order* type. The last set, a whole-tone scale, is a *fourth order* source set and is complement-producing under six cases of transposition and transposed inversion. These set types have been used by numerous composers, though in many cases, for example in Schoenberg's and Webern's compositions, the combinatorial potential is not fully (and in some cases not at all) realized.[15]

The idea of combinatoriality can be extended to tetrachords, trichords, dyads and to single notes. For example, consider the remarkably complex combinatorial possibilities of the set from Milton Babbitt's Composition for Twelve Instruments (1948) shown at the top of page 413.[16] Aggregates are given by each column; by hexachords (e.g., P_0Ha and R_8Ha or P_8Ha and R_4Ha), by initial trichords (e.g., of P_0, I_9, R_0 and RI_9), by initial dyads (e.g., of $P_{0,4,8}$ and $RI_{1,5,9}$), as well as by other combinations.

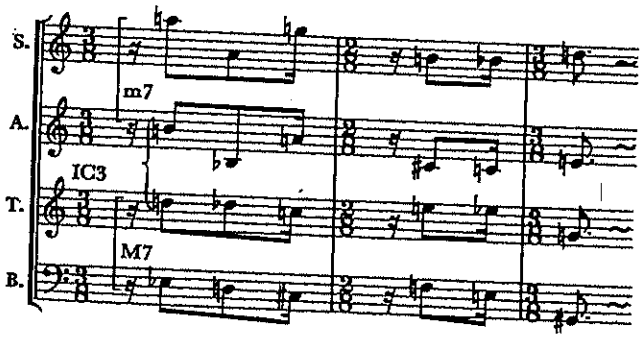
Another method of controlling vertical combinations is found in the fifth movement of Webern's last completed work, the Cantata No. 2, Op. 31. In Ex. 6-17, which is characteristic of all choral portions of the movement, the voices are deployed in pairs with the interval between members of each pair and the interval class between the two pairs (i.e., between the alto and tenor) remaining constant. Each choral sonority is therefore the same set type throughout—(0 1 4 6) in this case. Variety is achieved by changing contours within the voice parts and by rhythm and dynamics.

[15]This is probably due at least in part to the fact that the twelve-note method was not fully investigated as to its systematic potential until about 1945, the point at which Milton Babbitt completed a doctoral dissertation dealing with this topic.

[16]Babbitt, *op. cit.*, p. 81.

P_0	0,	1,	4,	9,	5,	8,	3,	10,	2,	11,	6,	7.
P_4	4,	5,	8,	1,	9,	0,	7,	2,	6,	3,	10,	11.
P_8	8,	9,	0,	5,	1,	4,	11,	6,	10,	7,	2,	3.
I_1	1,	0,	9,	4,	8,	5,	10,	3,	11,	2,	7,	6.
I_5	5,	4,	1,	8,	0,	9,	2,	7,	3,	6,	11,	10.
I_9	9,	8,	5,	0,	4,	1,	6,	11,	7,	10,	3,	2.
R_0	7,	6,	11,	2,	10,	3,	8,	5,	9,	4,	1,	0.
R_4	11,	10,	3,	6,	2,	7,	0,	9,	1,	8,	5,	4.
R_8	3,	2,	7,	10,	6,	11,	4,	1,	5,	0,	9,	8.
RI_1	6,	7,	2,	11,	3,	10,	5,	8,	4,	9,	0,	1.
RI_5	10,	11,	6,	3,	7,	2,	9,	0,	8,	1,	4,	5.
RI_9	2,	3,	10,	7,	11,	6,	1,	4,	0,	5,	8,	9.

EXAMPLE 6-17. Webern: Cantata No. 2, Op. 31 (1941–43). V, mm. 1–3. Copyright 1951, Universal Edition. Used by permission of the publisher. Theodore Presser Company sole representative United States, Canada and Mexico.



In Webern's Cantata No. I, Op. 29, a similar but more elaborate scheme characterizes the choral portions of the first movement. In this movement the succession of four-voice chords reflects the symmetrical nature of the set upon which it is based. Only three different set types are created by the combination of P and I forms, and these are presented in a scheme which is, like the interval structure of the set itself, a palindrome. The details of the set are shown in Ex. 6-18 along with a portion of the first choral entry. Note that the three tetrachordal set types also reflect the structure of the set in that they too are symmetrical.

In Exx. 6-17 and 6-18, neither combinatoriality nor the systematic presentation of aggregates plays a discernible role in the structure of the movements. Rather, the concern is with harmonic unity as achieved by schemata that may be viewed as logical atonal substitutes for tonal harmonic progressions.

THE MATRIX

Name_____

Row construction -- avoidance of thirds

Correct construction of Matrix

Correct use of Matrix

Idiomatic use of piano

Form -- use of row, focal point

Melodic and rhythmic interest

Thick texture

Manuscripting

Editing and articulation

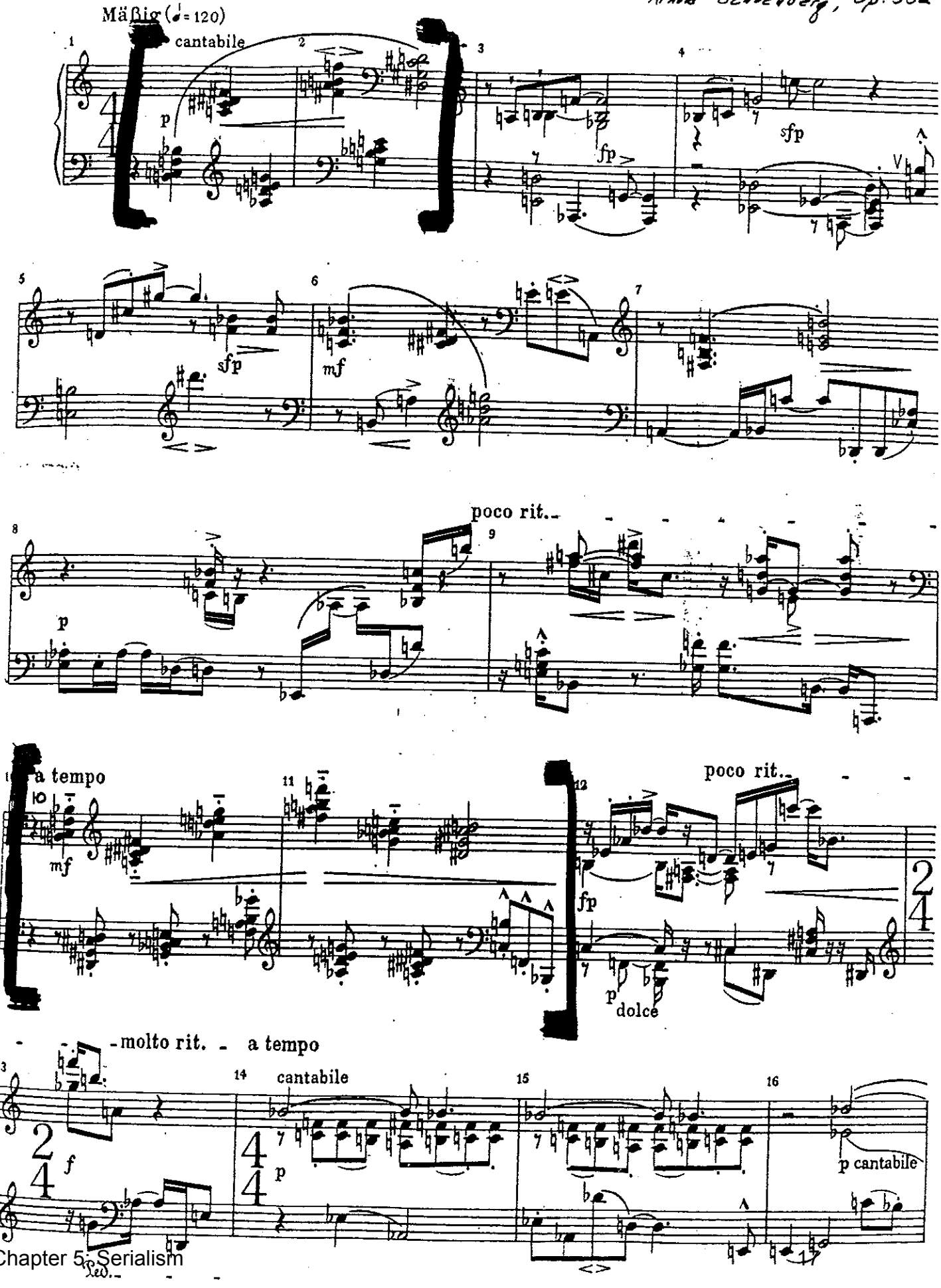
Analysis

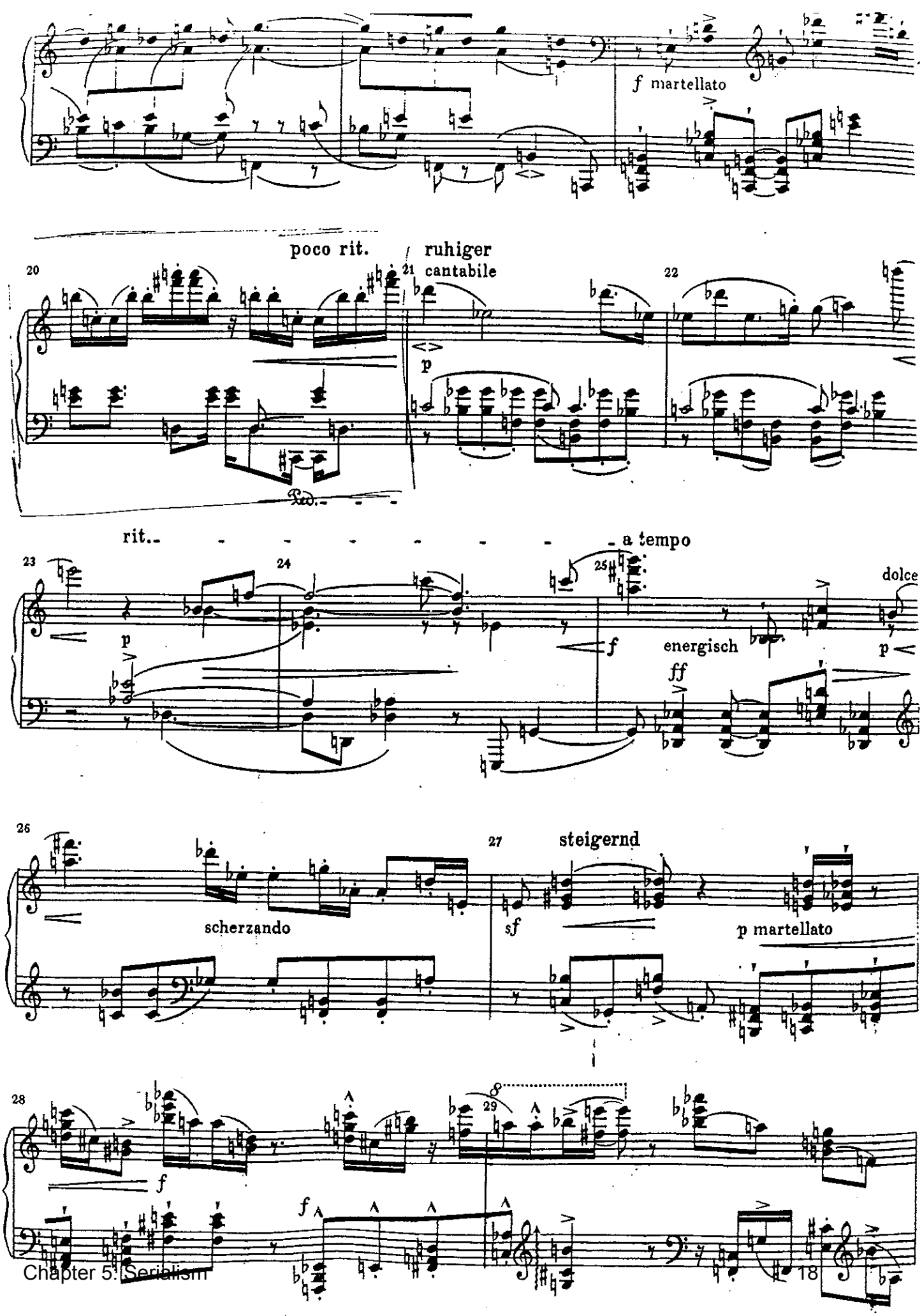
KLANGFARBENMELODIE (German for tone-color melody.) :

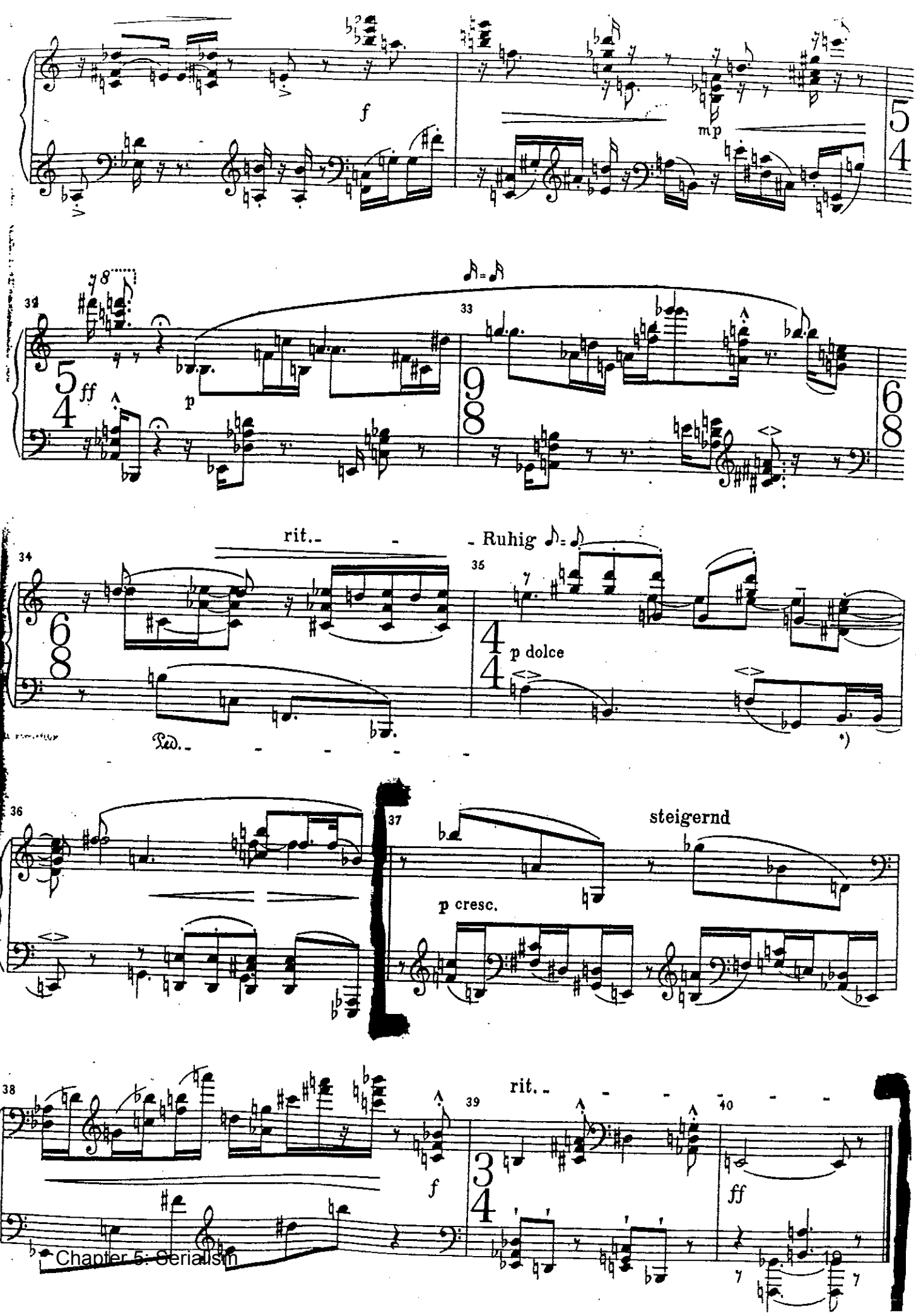
Tone-color melody is achieved by distributing the ***individual pitches*** in the melody to ***various instruments*** instead of limiting an entire melodic phrase to the same instrument (and thus the same tone-color). Schoenberg proposed and investigated the concept, particularly in his Five Orchestra Pieces, op. 16 (1909), as did Webern after him in a similar piece, op. 10 (1913). The implication is that tone color can be serialized as well as pitch and rhythm, an idea pursued notably by composers Milton Babbitt and Pierre Boulez.

KLAVIERSTUCK

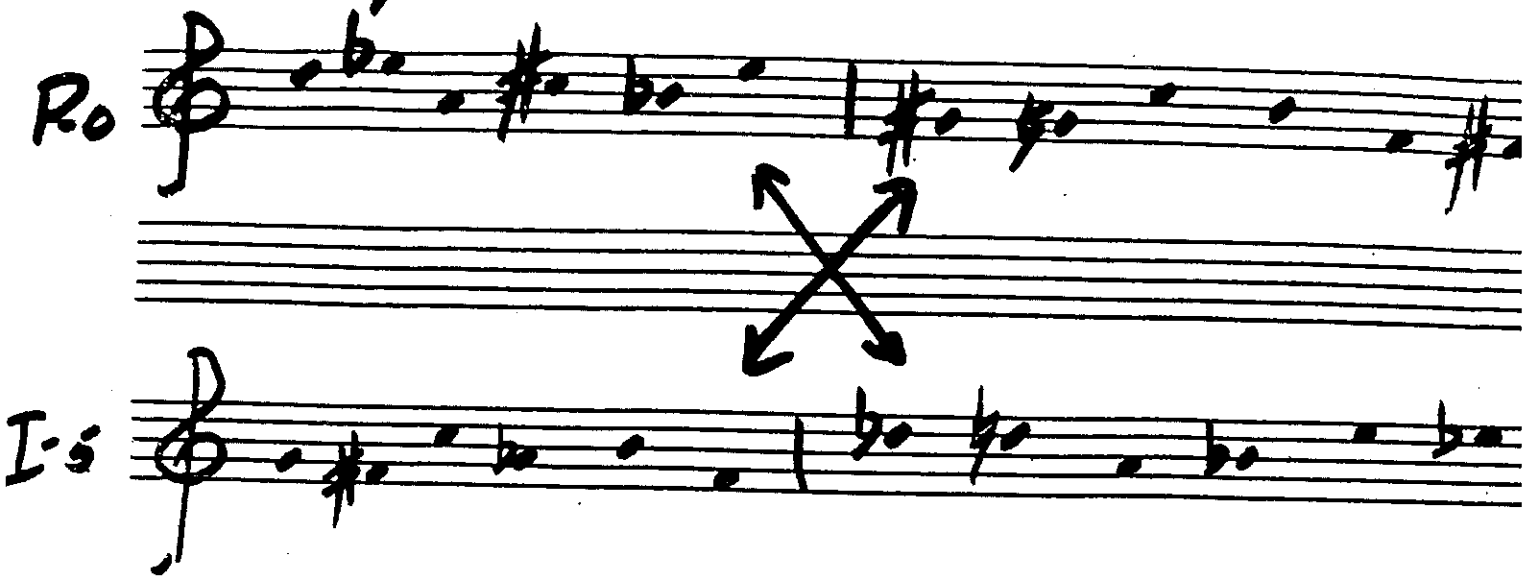
Arnold Schoenberg, Op. 33a




f martellato
poco rit.
ruhiger
20
21
cantabile
22
p
Ped.
rit.
a tempo
23
24
25
dolce
p
f
energisch
p
ff
26
27
steigernd
scherzando
sf
p martellato
28
29
f
f


f
mp
32
33
ff
p
rit.
Ruhig
34
35
p dolce
Ped.
*)
36
37
steigernd
p cresc.
38
39
40
f
rit.
ff

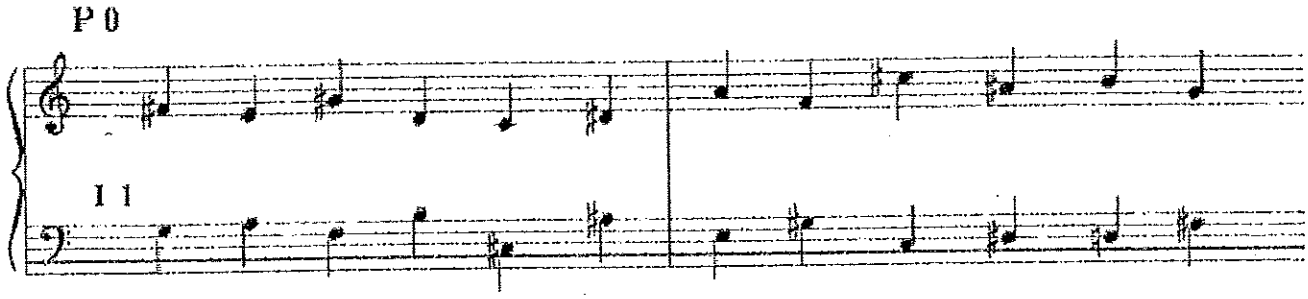
Op 32a



Combinatoriality:

This row's first hexachord consists of six entirely different pitches from those of the first hexachord of the set's <u>inversion</u> Transposed <u>five semitones upward.</u> (I 5)

combinatorial, combinatoriality. [s] (Babbitt) the special property of combining row forms simultaneously, without duplications of pitches (before all twelve pitches have occurred). The primary type of combinatoriality is **hexachordal**; e.g., the first six notes of Po of any twelve tone row combined with the first six notes of R0 are combinatorial. (The same is true of the last hexachords of Po and Ro). It follows that one harmonic segment of a row may be mapped onto another by operations of transposition, R, I, or RI. The primary type of combinatoriality is hexachordal; i.e., the first six notes of Po are always different from the first six notes of Ro and are, therefore, combinatorial. Retrograde combinatoriality was considered trivial by Babbitt and others. Focus of serial theory has been on other types, such as Inversional and Retrograde-Inversional combinatoriality. Here is an example of Inversional-hexachordal combinatoriality.



Swenson:

Combinatoriality is the relationship of two row forms in any completed Matrix, in which the first six notes [hexachord] of the first row form are *completely different* from the first six notes [hexachord] of the second row form.

Although this happens immediately with Po and Ro, 12-tone composers disregard these two as least significant/unusable. Somewhere in the completed Matrix, there will be two significant combinatorial row forms. Look especially at Po combined with each Inversion form or Retrograde Inversion form of the row until finding the I or RI which combines successfully with Po. [see Po and I1 music example, above]

Using combinatorial row forms simultaneously retains the randomness of the pitches. If one uses two row forms simultaneously which contain some of the same pitches occurring close together in real time, then the true random effect of 12-tone composition is compromised.

Pierrot, white-faced clown of the early Italian pantomime and puppet shows, returns in a new romantic guise in the second half of the nineteenth century, to inspire poets, playwrights, painters and composers. The comic exterior now masks the exquisite sufferings of a sensitive artist and lover, ever frustrated, whose only faithful confidant is the moon. Albert Giraud's cycle of poems, published in 1884, suggests by its title that his Pierrot is exceptionally moonstruck, and in fact the moon itself is second in importance only to Pierrot among the personages that appear. Schoenberg enhances the antinaturalistic quality of the original, not only by musical but also by extra-musical means. Of the fifty poems comprised in Giraud's *Pierrot Lunaire,* Schoenberg selected twenty-one (from the German translation by Otto Erich Hartleben), to correspond to the opus number of the work, and these he grouped into three parts of seven poems each. In order to assure that his mysticism would not be overlooked, Schoenberg christened the work *"Dreimal sieben Gedichte aus Albert Girauds Pierrot Lunaire."* The sequence of the pieces represents neither the order of the original nor the order in which they were composed. Though the individual pieces are not grouped according to any strict principle, there does appear to be a certain family resemblance among the images invoked within each of the three parts.

In Part One we see (1) the moondrunk poet, (2) the anxious lover who yearns to offer Columbine a bouquet of white blossoms of moonlight, (3) the dandy at his dressing table daubing his face with moonlight. In a woodland stream the moon washes fabrics made of light-beams (4). A Chopin waltz is morbidly likened to a pale drop of blood on the lips of a consumptive (5). The poet offers his verses as an altar to the Madonna, "mother of all sorrows" (6). The pale moon is deathly ill of insatiable love yearnings (7).

Part Two concentrates on images of crime, guilt and punishment. It opens with a terrifying picture of the coming of night, the wings of giant moths blotting out the sun (8). The poet begs Pierrot to give him back his laughter – to return, in other words, to the simple farcical roles of the old Italian comedy (9). Pierrot is a grave robber (10), a blasphemer (11). He will end on the gallows (12). In terror he stares at the moon, a shining scimitar about to decapitate him (13). In the final number (14) of Part Two the poet is crucified on his verses by the rabble.

Part Three is mainly concerned with Pierrot's home-sickness, his yearning for the old pantomime (15). Once more he enacts the old grotesqueries and roqueries. Using the bald head of the screaming Cassander he drills a pipe bowl, stuffs tobacco into it, inserts a pipestem, and smokes (16). The cruel moon mocks an ageing lovesick duenna waiting for Pierrot in an arbour (17). He discovers a white spot on the collar of his black jacket, rubs it until, by early morning, it (a spot of moonlight) disappears (18). When Cassander interrupts his midnight serenade, he seizes him by the collar and dreamily scrapes his viola bow back and forth across Cassander's bald head (19). With a water-lily for a boat and a moonbeam for a rudder, Pierrot travels homeward, to Bergamo (20). In the final number (21) the poet, abandoning his gloom, invokes the antique fragrance of a fairytale world of long ago.

Each of the poems is a *rondeau,* a French form of thirteen lines, with lines one and two

repeated as lines seven and eight, and line one repeated again as line thirteen. The poetic structure is therefore a very obvious one, and assures a certain formal clarity and overall unity in itself. One of the most ingenious aspects of Schoenberg's settings is the variety of musical structures that he employs, each of which relates to the poetic structure in an individual manner. This and other methods for strongly differentiating the individual pieces are necessitated and justified by the repetitive poetic form and by the style of vocal declamation used throughout (*Sprechstimme*, a type of recitative invented by Schoenberg, in which the vocal part is *spoken* to exact time values, with the vowels momentarily touching the indicated pitch and at once rising or falling away from it). The five players and eight instruments (piano; flute and piccolo; clarinet and bass clarinet; violin and viola; cello) are all employed only in the final number. Otherwise they are used as a source of various special ensembles to provide characteristic instrumentations for the different pieces. For example: one of the pieces is accompanied only by the flute, another only by clarinet and piano; there is a trio for piccolo, clarinet and piano, another trio for flute, clarinet and violin, a third for bass clarinet, cello and piano, a fourth for viola, cello and piccolo. Even the pauses *between* the pieces are differentiated: there are measured pauses of various durations, unmeasured pauses of various durations, conclusive pauses, preparatory pauses, transitions.

Several instances of tone-painting are found. The most obvious is the flourish in the piccolo at the conclusion of the Gallows Song. Obvious through *negative* emphasis is the soaring cello passage that accompanies the description of Pierrot's performance on the viola in the Serenade. The cello has several pizzicato notes, but not at the point where Pierrot's mournful pizzicato is mentioned. The significance of the canons in Parody and Moonspot is more esoteric. In the former the imitative writing symbolizes the mimicry of the moonbeams. In the latter a retrograde version of the canons commences at the precise instant, exactly midway through the piece, when Pierrot discovers the white spot on his coat, and concludes when he finally, as he thinks, rubs it off. The "old fragrance" in the concluding piece is suggested by parallel thirds and a recurring E major triad.

Far more problematical than the matters just discussed is the question of pitch organization in the music. *Pierrot Lunaire*, composed in 1912, is a sort of compendium of all the styles and techniques that Schoenberg had evolved since his earliest "free" atonal work less than four years earlier, and it introduces some new elements as well. Some pieces (for example, No. 13) have the amorphous continuity of *Erwartung*, or of Op. 11, No. 3 – a kind of stream of consciousness writing that defies objective analysis. Others (most rigorously No. 8) exploit the principle of the generative cell, a principle that anticipates, in certain respects, the twelve-tone system which Schoenberg was to evolve eleven years later. Several pieces (most consistently the first) employ ostinatos. Two pieces, mentioned above, are canonic. Moonspot is probably one of the most involved polyphonic structures ever conceived. The piano presents a three-part fugue, whose form is somewhat obscured by the crossing of voices and the occasional use of supplementary notes. The clarinet and piccolo form strict canons in diminution with the first two voices of the fugue. A third canon, independent of the others, is formed by the violin and cello. At the midpoint of the piece the clarinet and piccolo, proceeding at twice the speed of their canonic

PICCOLO
CLARINET - BASS CLARINET
VIOLIN - VIOLA
PIANO
CELLO

ARNOLD SCHOENBERG
(1874-1951)

PIERROT LUNAIRE, Op. 21 (1912)

Thrice Seven Poems from Albert Giraud's *Pierrot Lunaire*
(German by Otto Erich Hartleben)

Arnold Schoenberg wrote *Pierrot Lunaire* in 1912 at the request of the actress Albertine Zehme, whose acquaintance the composer had made shortly after he moved from Vienna to Berlin in 1911. As usual, Schoenberg wrote with incredible speed: all but two of the pieces were composed between March 12 and May 30, and fourteen of them required no more than a single day each for completion. The actress had originally wanted only a piano accompaniment to her recitation; Schoenberg extracted permission to use the other instruments one by one. Thus economic considerations played a significant role in the formation of the ensemble that lends *Pierrot* its remarkable timbral profile.

The first performance took place on October 16, 1912, in a small theater in Berlin. Frau Zehme recited in a Columbine costume, while Schoenberg conducted the musicians behind a transparent scrim.

Schoenberg gave an important key to his attitude towards the text in his foreword to the published score, when he wrote: "In this work the performers at no time have the task of shaping the mood and character of the individual pieces according to the meaning of the words, but rather according to the music. To whatever extent the composer felt a tone-pictorial representation of the actions and feelings indicated in the text to be important, it is simply to be found in the music. Where the performer does not find such representation, he should refrain from adding anything that the composer did not want. In this instance he would not be adding, but rather detracting."

9 GLUET AN PIERROT

Pierrot! Mein Lachen
Hab ich verloren!
Das Bild des Glanzes
Zerfloß, zerfloß!

Schwarz weht die Flagge
Mir nun vom Mast.
Pierrot! Mein Lachen
Hab ich verloren!

O gieb mir wieder,
Rodaxet der Seele,
Schneemann der Lyrik,
Durchlaucht vom Monde,
Pierrot – mein Lachen!

9 PRAYER TO PIERROT

clarinet in A, piano

Pierrot! My laughter's
All forgot!
The radiant image
Dissolved – dissolved!

Black blows the flag
That flies at my mast.
Pierrot! My laughter's
All forgot!

O give me back –
Soul's Veterinarian,
Snowman of Verse,
Your Way-Up-Highness the Moon,
Pierrot – my laughter!

13. ENTHAUPTUNG

Der Mond, ein blankes Türkenschwert
Auf einem schwarzen Seidenkissen,
Gespenstisch groß – graut er hinab
Durch schmerzensdunkle Nacht.

Pierrot irrt ohne Rast umher
Und starrt empor in Todesangsten
Zum Mond, dem blanken Türkenschwert
Auf einem schwarzen Seidenkissen.

Es schlottern unter ihm die Knie,
Ohnmächtig bricht er jäh zusammen.
Er wähnt: es sause strahlend schon
Auf seinen Sündernacken hernieder
Der Mond, das blanke Türkenschwert.

13. BEHEADING

bass clarinet in Bb, viola, cello, piano

The moon, a naked scimitar
Upon a black silk cushion,
Ghostly huge hangs threatening down
Through night as dark as woe.

Pierrot, who paces about in panic,
Stares up and feels the clutch of death
At sight of moon, a naked scimitar
Upon a black silk cushion.

Knees atremble, quaking, shaking,
He falls into a faint of fright.
Convinced it's flashing down already
On his guilty sinful neck,
The moon, the naked scimitar.

14. DIE KREUZE

Heilge Kreuze sind die Verse,
Dran die Dichter stumm verbluten,
Blindgeschlagen von der Geier
Flatterndem Gespensterschwarme!

In den Leibern schwelgten Schwerter,
Prunkend in des Blutes Scharlach!
Heilge Kreuze sind die Verse,
Dran die Dichter stumm verbluten.

Tot das Haupt – erstarrt die Locken –
Fern, verweht der Lärm des Pöbels.
Langsam sinkt die Sonne nieder,
Eine rote Königskrone. –
Heilge Kreuze sind die Verse!

14. THE CROSSES

flute, clarinet in A, violin, cello, piano

Poems are poets' holy crosses
Where they, silent, bleed to death,
Eyes struck blind by beating wings
Of a spectral vulture swarm.

Their ragged flesh the prey of daggers
Reveling in their scarlet blood!
Poems are poets' holy crosses
Where they, silent, bleed to death.

Bowed and wounded sinks the head,
After the silly mob still prattles.
Slowly solemn sinks the sun,
Gold and red of royal crown.
Poems are poets' holy crosses.

18. DER MONDFLECK

Einen weißen Fleck des hellen Mondes
Auf dem Rücken seines schwarzen Rockes,
So spaziert Pierrot im lauen Abend,
Aufzusuchen Glück und Abenteuer.

Plötzlich stört ihn was an seinem Anzug,
Er beschaut sich rings und findet richtig –
Einen weißen Fleck des hellen Mondes
Auf dem Rücken seines schwarzen Rockes.

Wartet! denkt er: das ist so ein Gipsfleck!
Wischt und wischt, doch –
bringt ihn nicht herunter!
Und so geht er, giftgeschwollen, weiter,
Reibt und reibt bis an den frühen Morgen –
Einen weißen Fleck des hellen Mondes.

18. THE MOONFLECK

piccolo, clarinet in Bb, violin, cello, piano

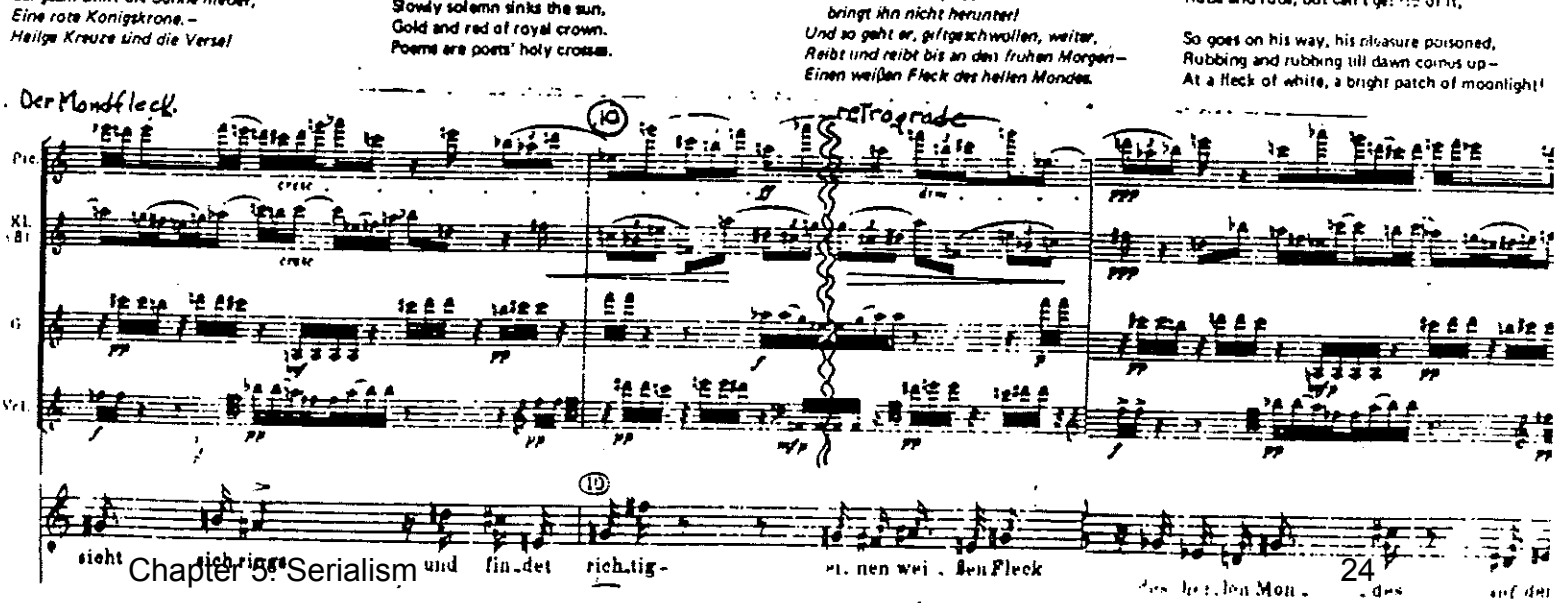
With a fleck of white – bright patch of moonlight –
On the back of his black jacket,
Pierrot strolls about in the mild evening air
On his night time hunt for fun and good pickings.

Suddenly something strikes him as wrong.
He checks his clothes over and sure enough finds
A fleck of white – bright patch of moonlight –
On the back of his black jacket.

Damn! he thinks. There's a spot of white plaster!
Rubs and rubs, but can't get rid of it,

So goes on his way, his pleasure poisoned,
Rubbing and rubbing till dawn comes up –
At a fleck of white, a bright patch of moonlight!

Der Mondfleck.

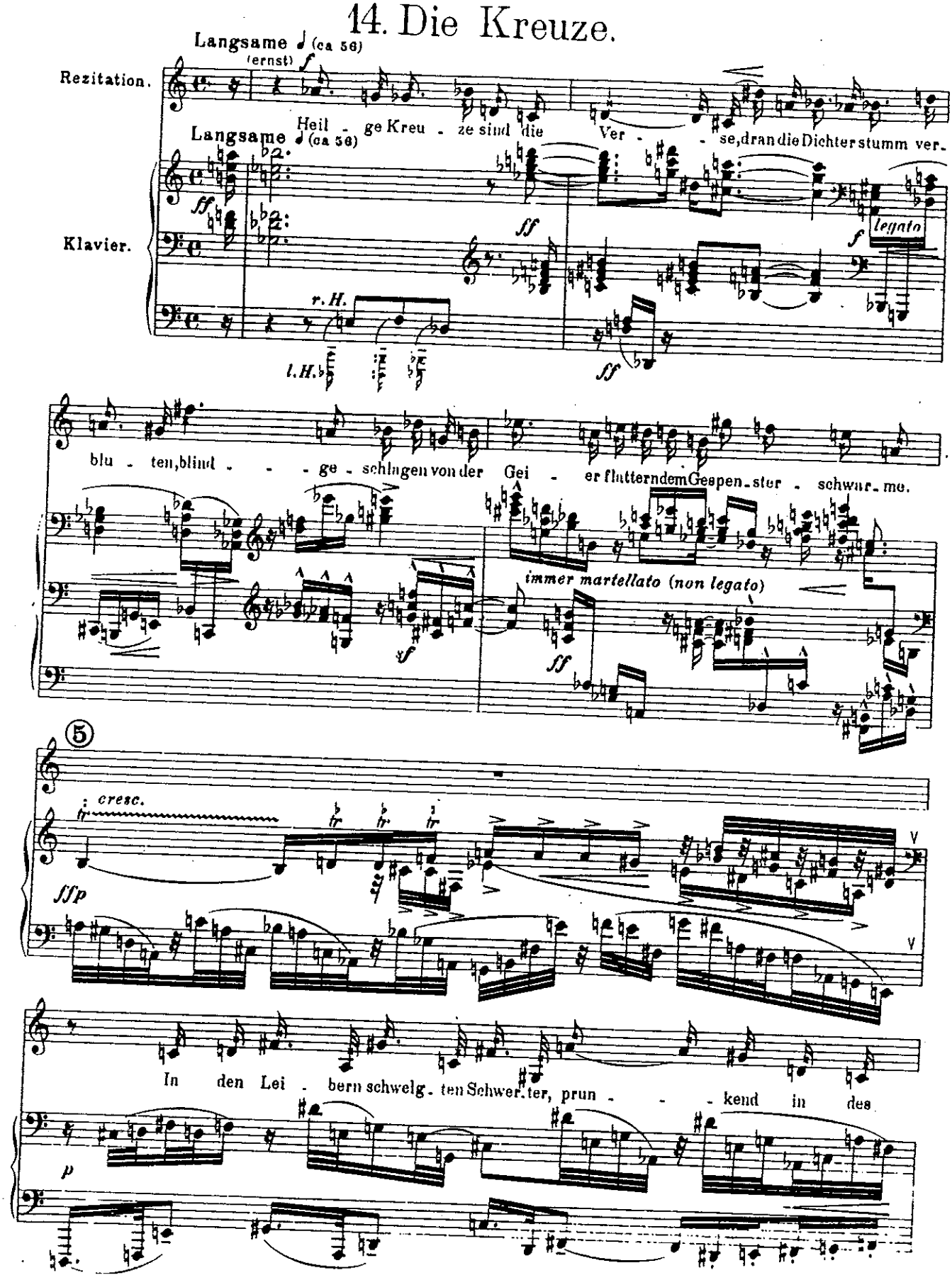


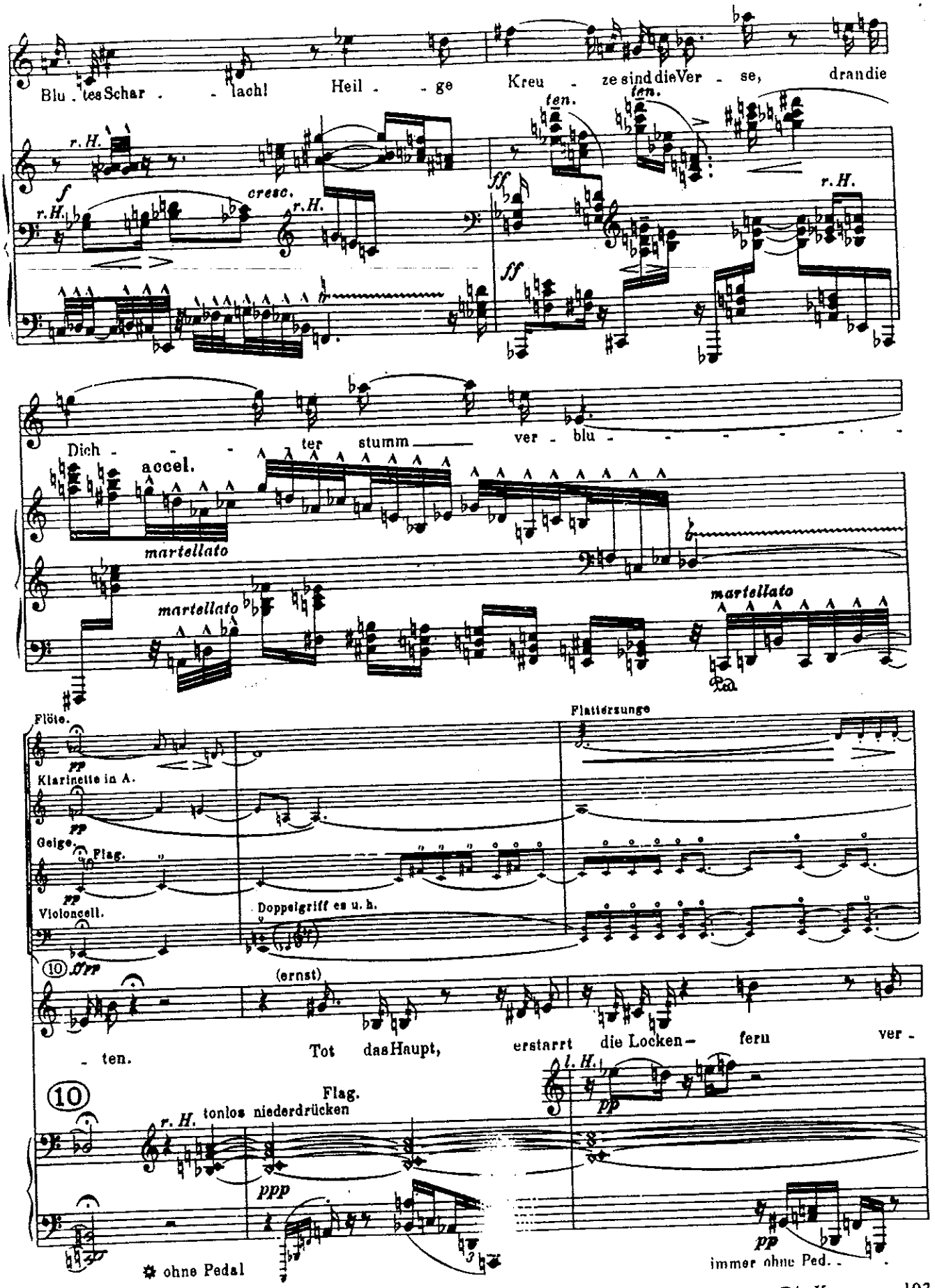
XIV. THE CROSSES

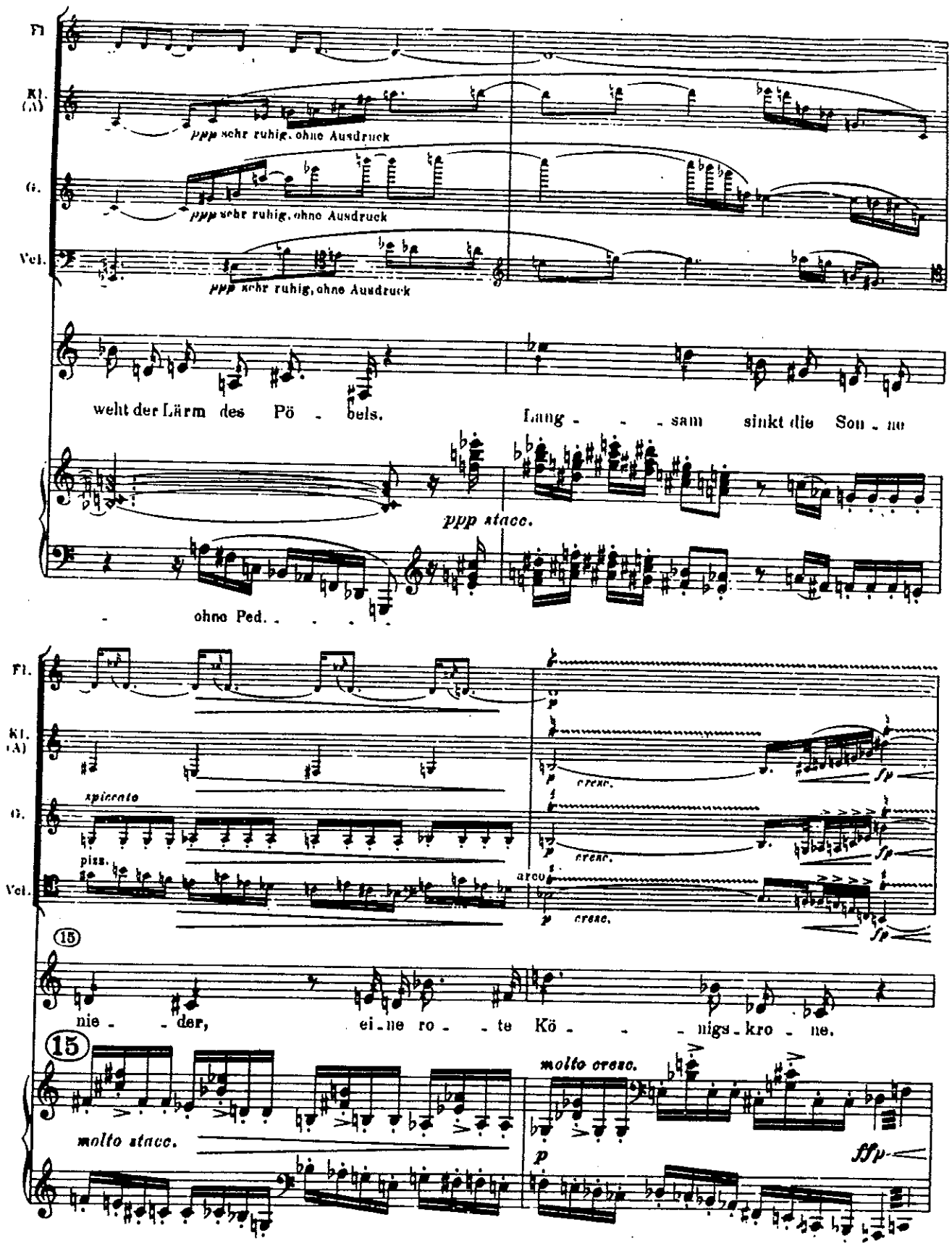
Poems are poets' holy crosses
Where they, silent, bleed to death,
Eyes struck blind by beating wings
Of a spectral vulture swarm.

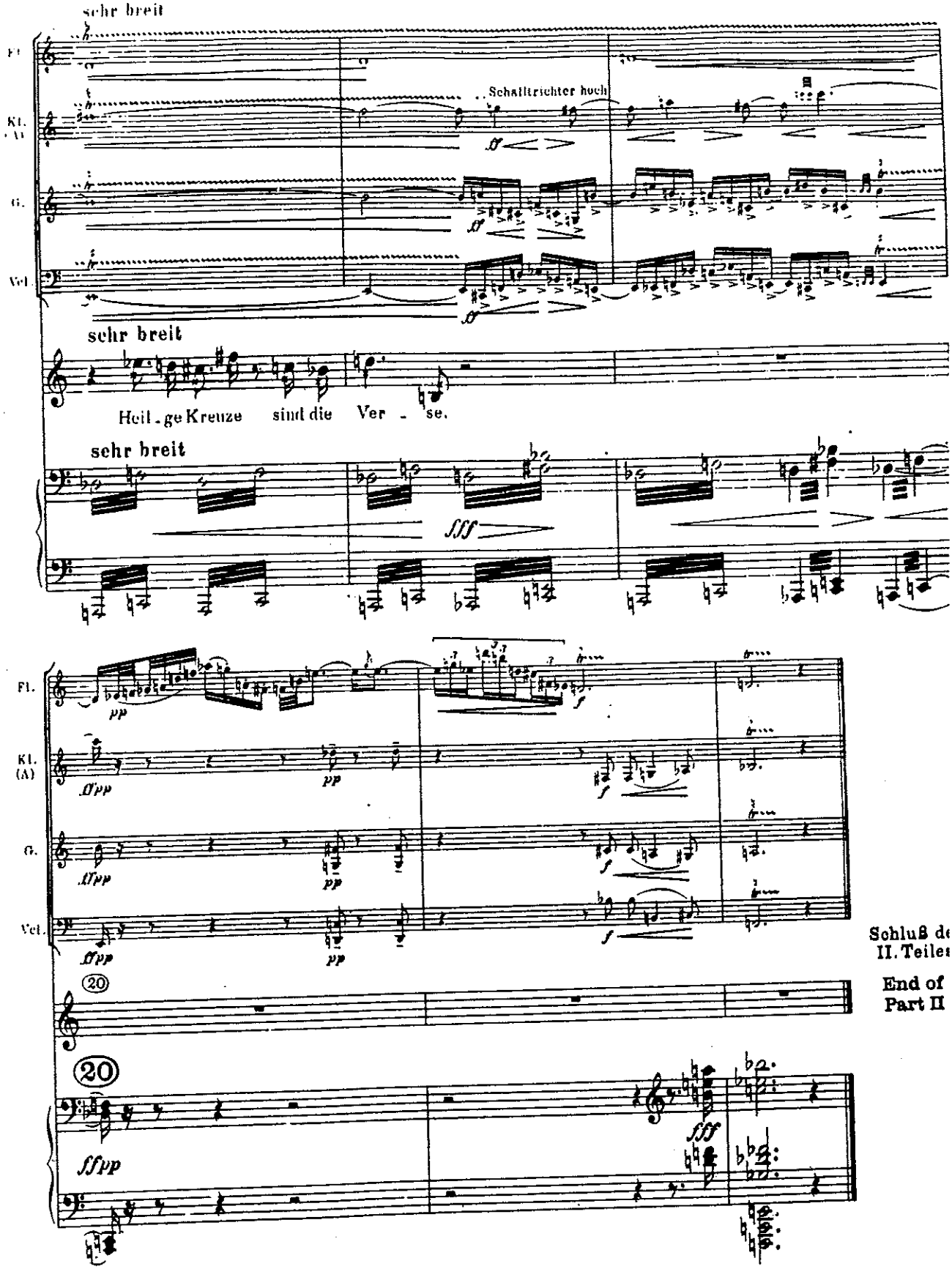
Their ragged flesh the prey of daggars
Reveling in their scarlet blood!
Poems are poets' holy crosses
Where they, silent, bleed to death.

Bowed and wounded sinks the head,
Afar the silly mob still prattles.
Slowly solemn sinks the sun,
Gold and red of royal crown.
Poems are poets' holy crosses.


14. Die Kreuze.
Langsame ♩ (ca 56)
(ernst)
Rezitation.
Heil - ge Kreu - ze sind die Ver - - se, dran die Dichter stumm ver-
Langsame ♩ (ca 56)
Klavier.
r. H.
l. H.
legato
blu - ten, blind - - - ge - schlungen von der Gei - er flatterndem Gespen-ster - schwar-me.
immer martellato (non legato)
cresc.
In den Lei - bern schweig - ten Schwer-ter, prun - - - kend in des


Blu - tes Schar - - lacht Heil - - ge Kreu - ze sind die Ver - se, dran die
r. H.
f
cresc.
r. H.
ten.
ten.
ff
r. H.
ff
Dich - - - ter stumm ver - blu - - - - - - -
accel.
martellato
martellato
martellato
Flöte.
Flatterzunge
pp
Klarinette in A.
pp
Geige.
Flag.
pp
Violoncell.
Doppelgriff es u. h.
10
fff
(ernst)
- ten.
Tot das Haupt, erstarrt die Locken - fern ver -
10
Flag.
r. H. tonlos niederdrücken
l. H.
pp
ppp
pp
immer ohne Ped.
ohne Pedal


Fl.
Kl. (A)
G.
Vcl.
ppp sehr ruhig, ohne Ausdruck
ppp sehr ruhig, ohne Ausdruck
ppp sehr ruhig, ohne Ausdruck
weht der Lärm des Pö - bels.
Lang - - - sam sinkt die Son - ne
ppp stacc.
ohne Ped.
Fl.
Kl. (A)
G.
Vcl.
spiccato
pizz.
arco
cresc.
cresc.
cresc.
fp
fp
fp
15
nie - - der,
ei - ne ro - - te Kö - - - nigs - kro - ne.
15
molto stacc.
molto cresc.
p
fffp

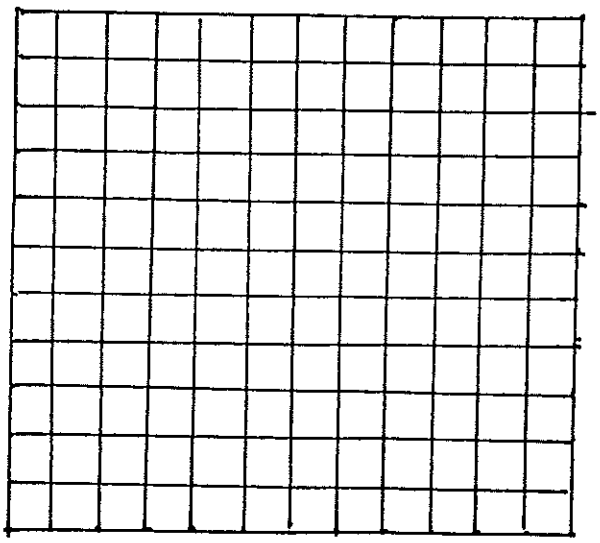

sehr breit
Fl.
Kl. (A)
G.
Vcl.
..Schalltrichter hoch
sehr breit
Heil - ge Kreuze sind die Ver - se.
sehr breit
Fl.
Kl. (A)
G.
Vcl.
Schluß de
II. Teiles
End of
Part II
20
20

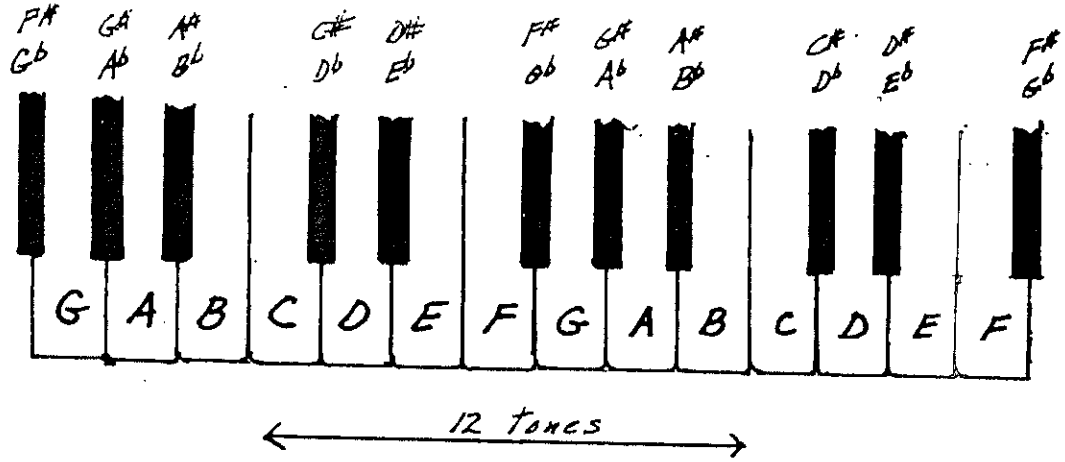
P = Prime R = Retrograde I = Inversion RI = Retrograde – Inversion

MATRIX

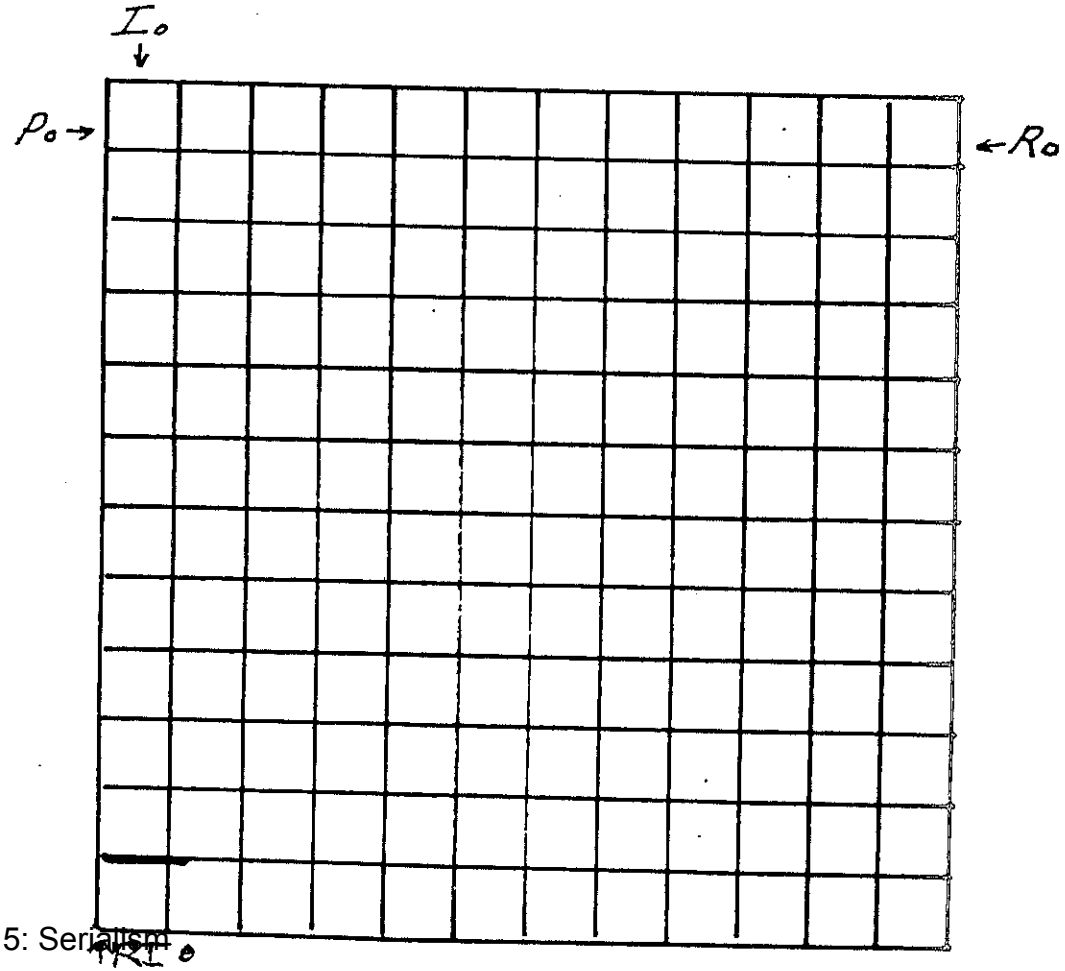
	I 0	7	2	1	11	3	5	8	9	6	4	10	
P 0 →	$B^{\flat}$	F	C	B	A	$C^{\#}$	$D^{\#}$	$F^{\#}$	G	E	D	$A^{\flat}$	← R 0
5	$E^{\flat}$	$B^{\flat}$					$G^{\#}$					$D^{\flat}$	5
10	$A^{\flat}$		$B^{\flat}$				$C^{\#}$					$G^{\flat}$	10
11	A			$B^{\flat}$			D					G	11
1	B				$B^{\flat}$		E					A	1
9	G					$B^{\flat}$	C					F	9
7	F						$B^{\flat}$					$E^{\flat}$	7
4	D						G	$B^{\flat}$				C	4
3	$C^{\#}$						$F^{\#}$		$B^{\flat}$			B	3
6	E						A			$B^{\flat}$		D	6
8	$F^{\#}$						B				$B^{\flat}$	E	8
2	C	G	D	$C^{\#}$	B	$D^{\#}$	F	$G^{\#}$	A	$F^{\#}$	E	$B^{\flat}$	2

RI 0 7 2 1 11 3 5 8 9 6 4 10





MATRIX



P = Prime

R = Retrograde

I = Inversion

RI = Retrograde–Inversion

	I_0	I_3	I_2	I_1	I_5	I_4	I_{10}	I_{11}	I_7	I_8	I_9	I_6	
P_0	F	$G^\#$	G	$F^\#$	$B^\flat$	A	$E^\flat$	E	C	$C^\#$	D	B	R_0
P_9	D	F	E	$E^\flat$	G	$F^\#$	C	$C^\#$	A	$B^\flat$	B	$G^\#$	R_9
P_{10}	$E^\flat$	$F^\#$	F	E	$G^\#$	G	$C^\#$	D	$B^\flat$	B	C	A	R_{10}
P_{11}	E	G	$F^\#$	F	A	$G^\#$	D	$E^\flat$	B	C	$C^\#$	$B^\flat$	R_{11}
P_7	C	$E^\flat$	D	$C^\#$	F	E	$B^\flat$	B	G	$G^\#$	A	$F^\#$	R_7
P_8	$C^\#$	E	$E^\flat$	D	$F^\#$	F	B	C	$G^\#$	A	$B^\flat$	G	R_8
P_2	G	$B^\flat$	A	$G^\#$	C	B	F	$F^\#$	D	$E^\flat$	E	$C^\#$	R_2
P_1	$F^\#$	A	$G^\#$	G	B	$B^\flat$	E	F	$C^\#$	D	$E^\flat$	C	R_1
P_5	$B^\flat$	$C^\#$	C	B	$E^\flat$	D	$G^\#$	A	F	$F^\#$	G	E	R_5
P_4	A	C	B	$B^\flat$	D	$C^\#$	G	$G^\#$	E	F	$F^\#$	$E^\flat$	R_4
P_3	$G^\#$	B	$B^\flat$	A	$C^\#$	C	$F^\#$	G	$E^\flat$	E	F	D	R_3
P_6	B	D	$C^\#$	C	E	$E^\flat$	A	$B^\flat$	$F^\#$	G	$G^\#$	F	R_6
	RI_0	RI_3	RI_2	RI_1	RI_5	RI_4	RI_{10}	RI_{11}	RI_7	RI_8	RI_9	RI_6	

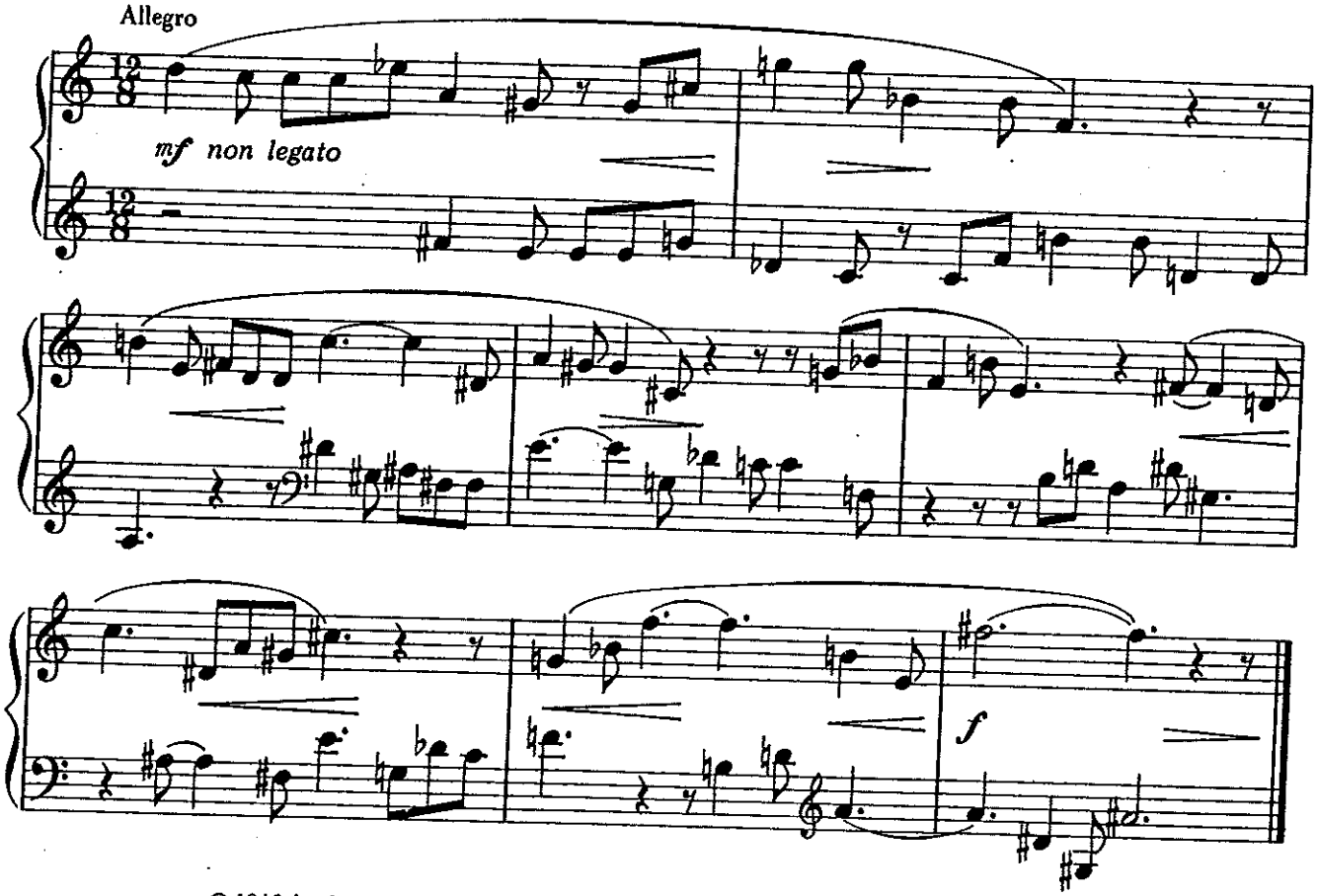
$P_0 - P_6$ Combinatorial

29

Twelve-Tone Technique [1]

The right hand part of the following excerpt consists of three statements of the basic "set" (sometimes called "row" or "series"). Write out the set before beginning analysis.

285. Křenek (1900–), *Eight Piano Pieces,* No. 1, "Etude"



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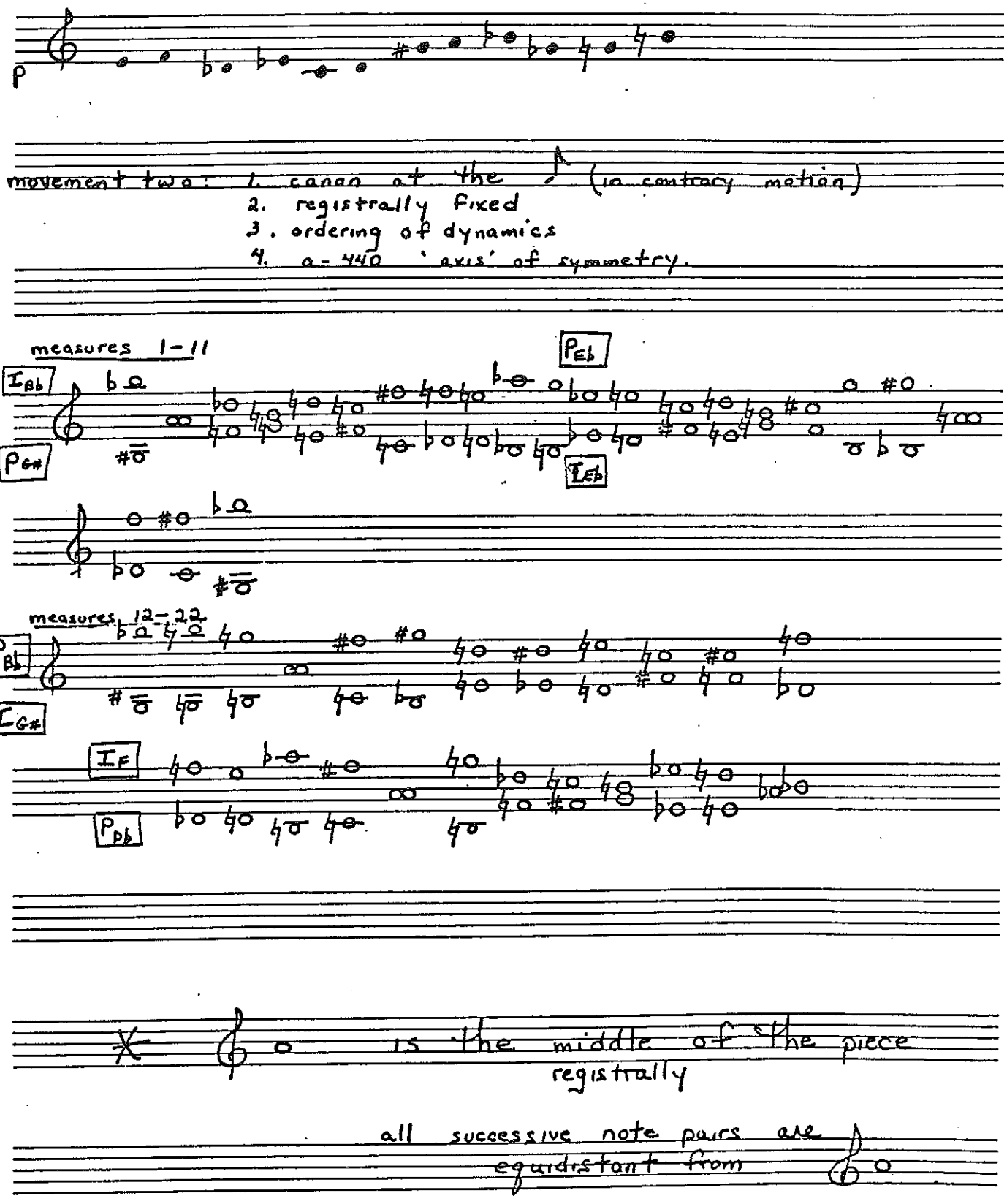
[1] For explanations of twelve-tone technique, see: Apel, *Harvard Dictionary of Music,* 2nd ed., article "Serial Music"; Dallin, *Techniques of Twentieth Century Composition,* chapter 14; Krenek, *Studies in Counterpoint;* Marquis, *Twentieth Century Music Idioms,* chapter 7; Perle, *Serial Composition and Atonality;* Schoenberg, *Style and Idea,* chapter 5; Ulehla, *Contemporary Harmony,* chapters 20 and 21.

Webern : Piano Variations op. 27



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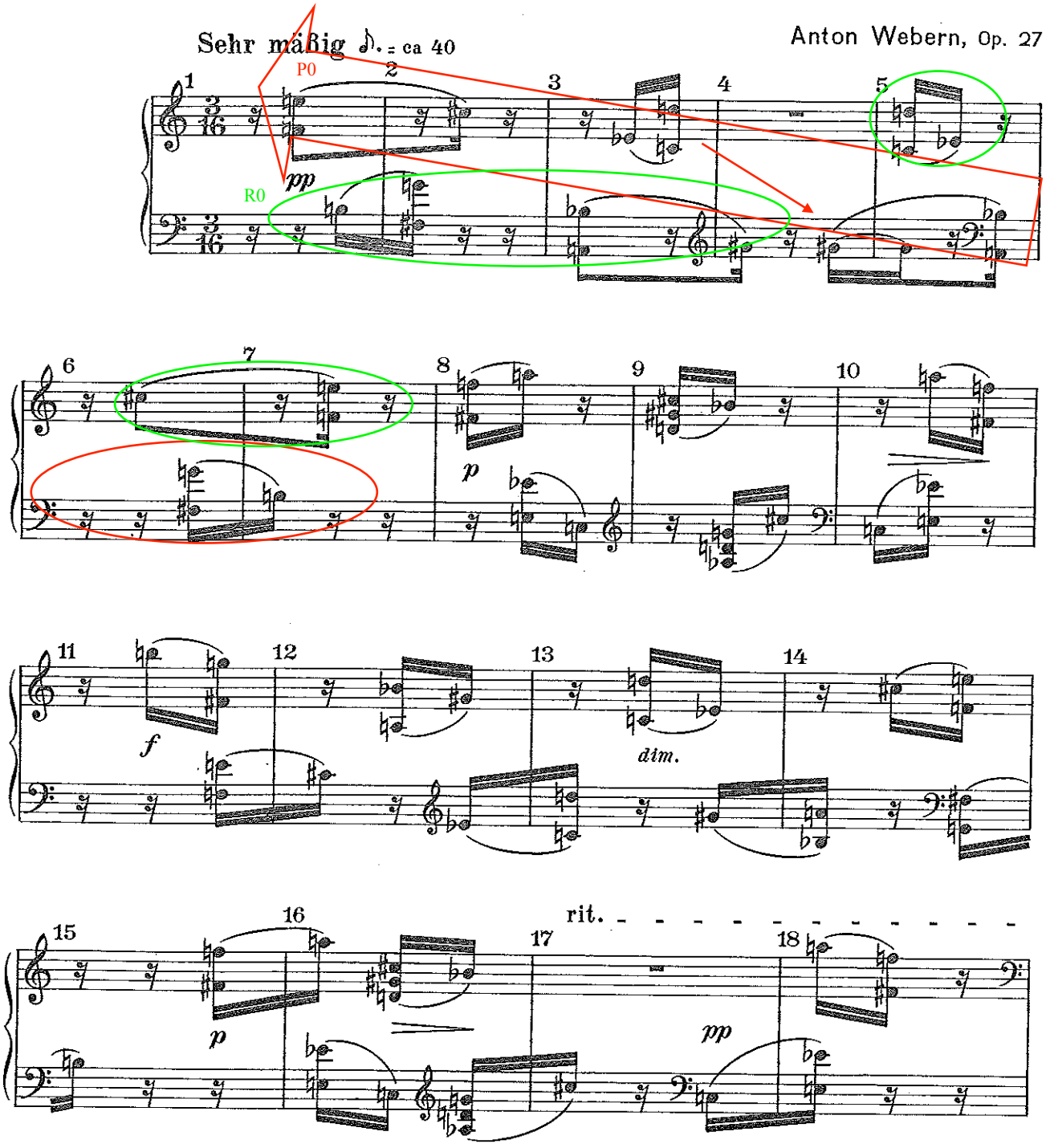
VARIATIONEN

I



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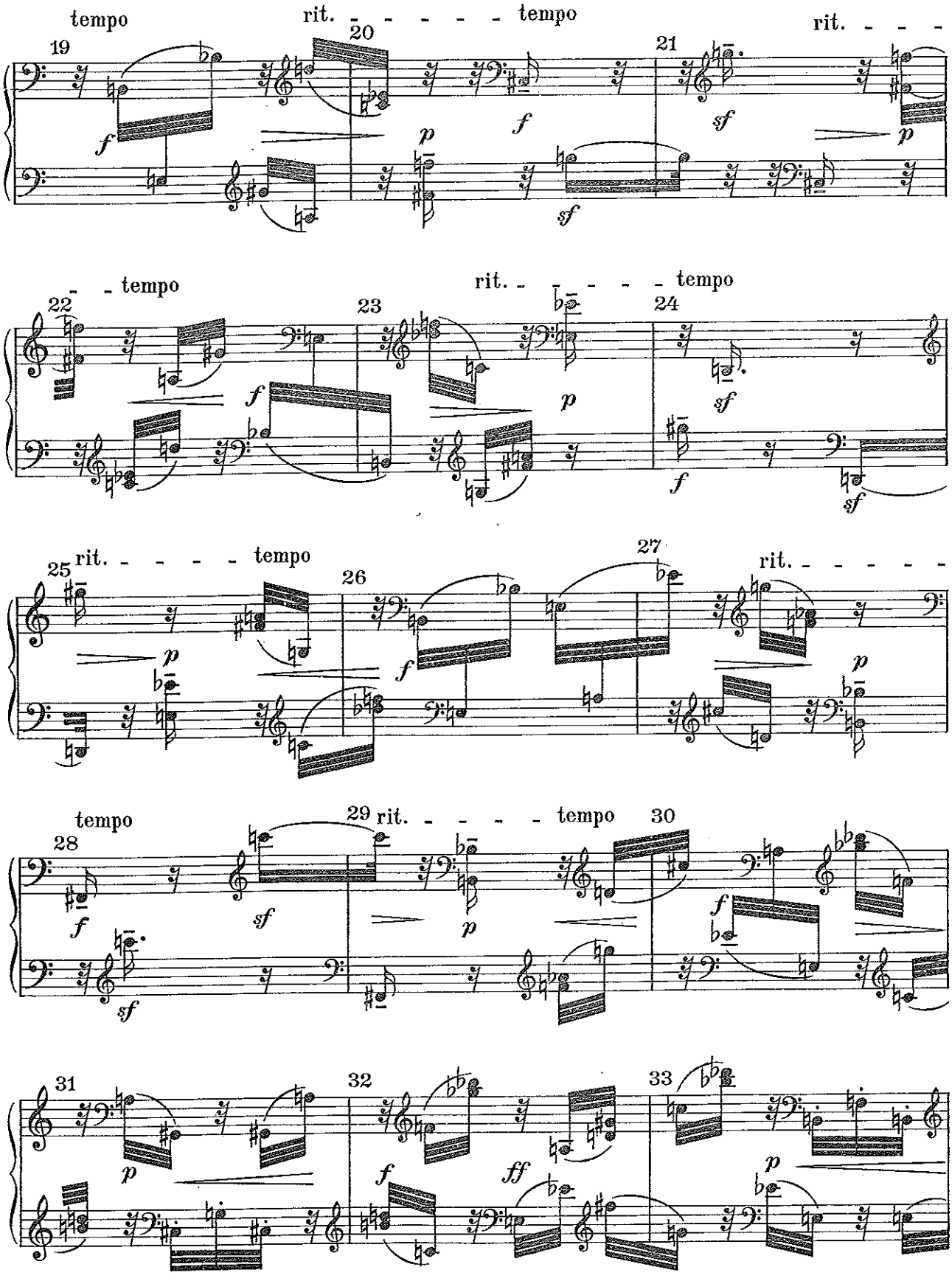
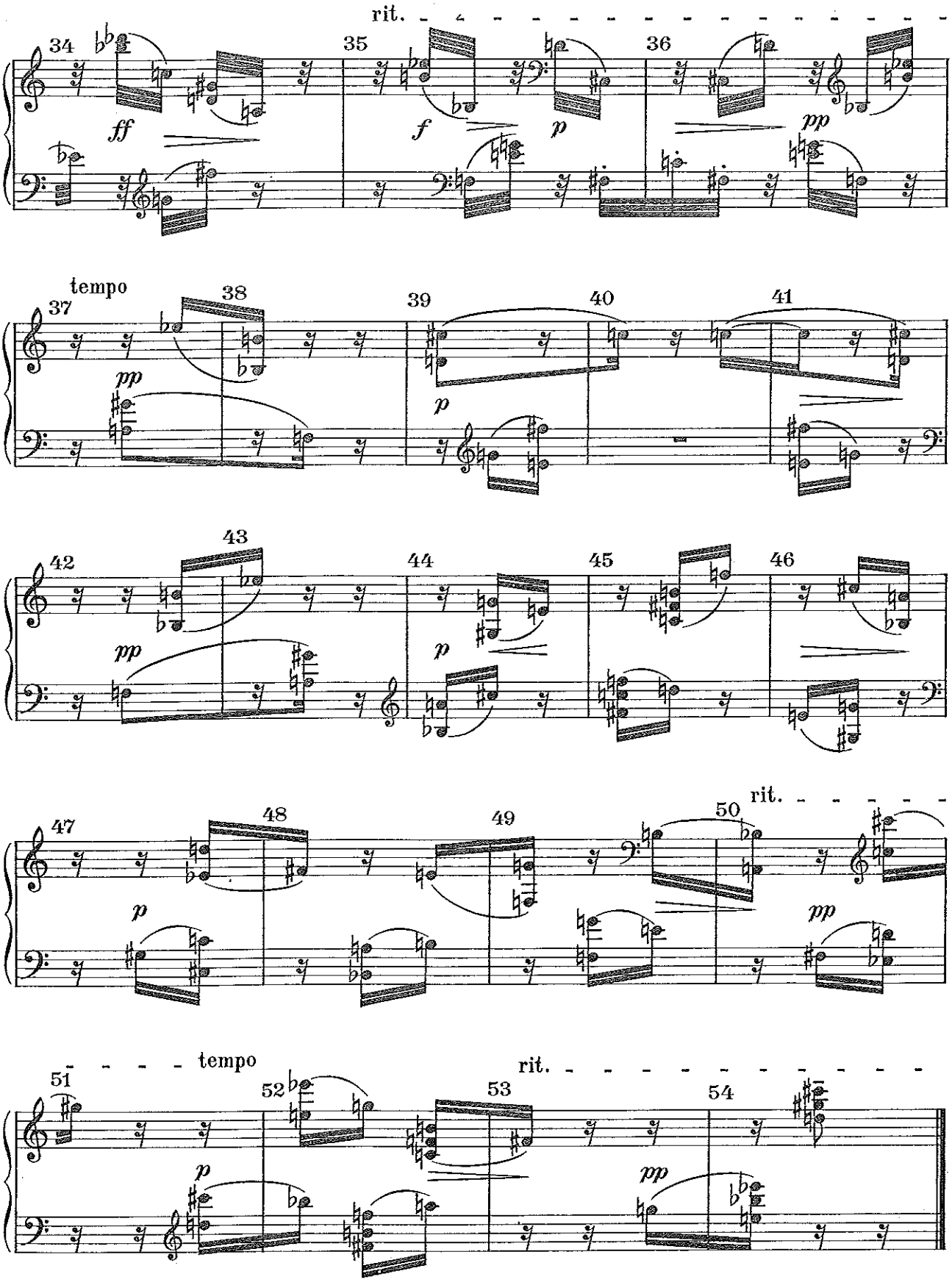
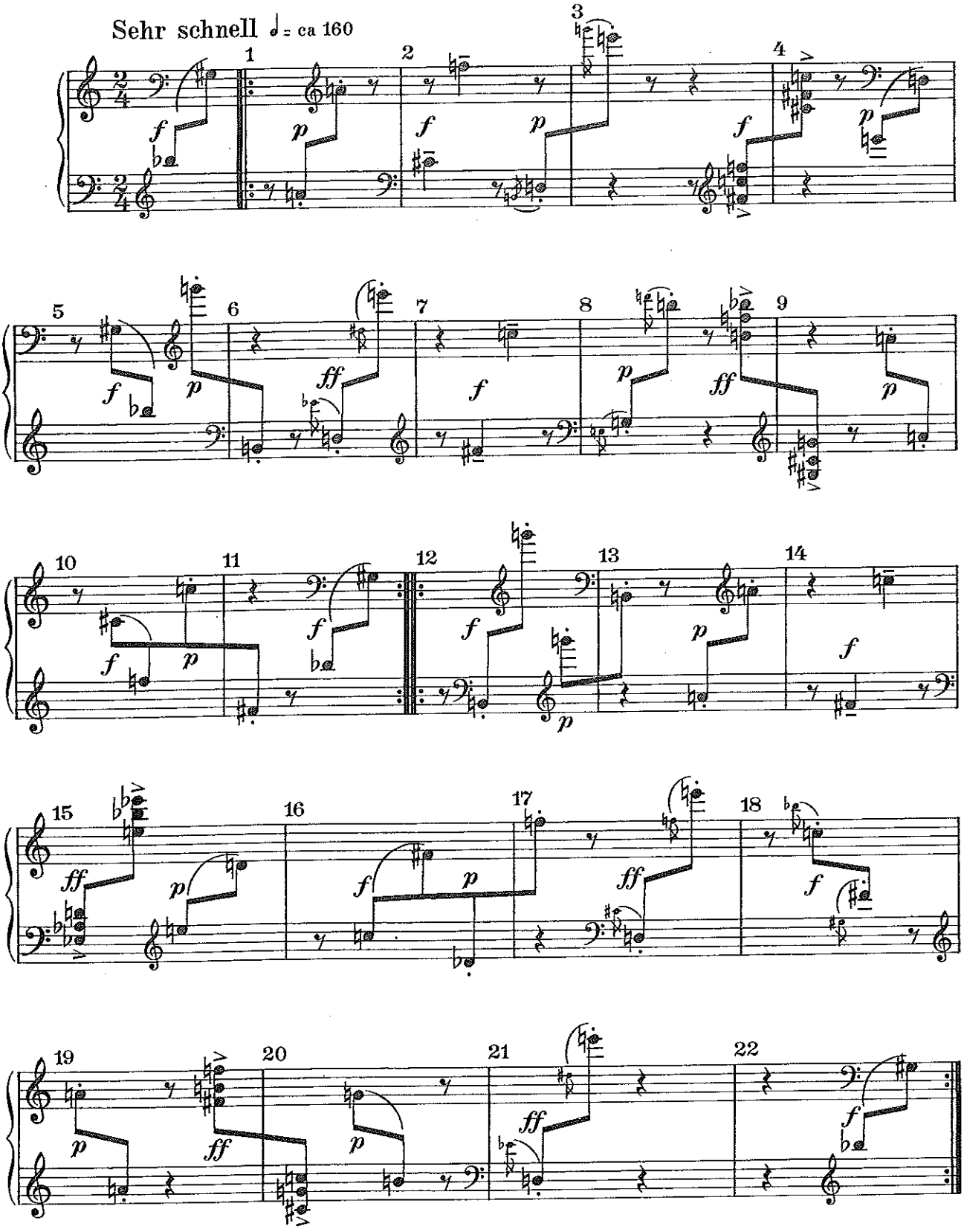

tempo
rit. - - - - - tempo
rit. - - -
19
20
21
22
- - tempo
rit. - - - - - tempo
23
24
25
rit. - - - - - tempo
26
27
rit. - - - - -
tempo
28
29 rit. - - - - - tempo
30
31
32
33


rit.
34
35
36
ff
f
p
pp
tempo
37
38
39
40
41
pp
p
42
43
44
45
46
pp
p
rit.
47
48
49
50
p
pp
tempo
rit.
51
52
53
54
p
pp

II



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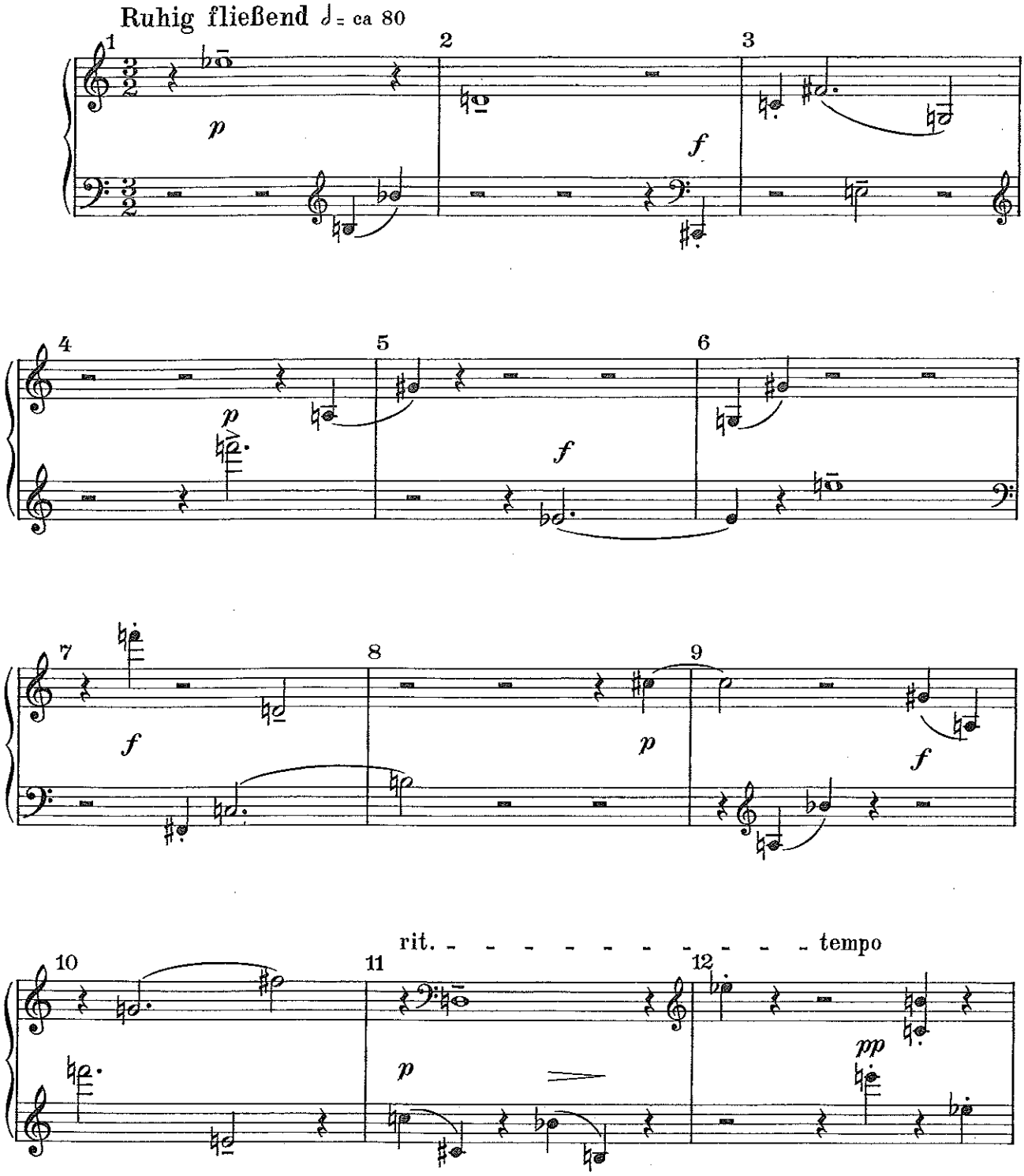
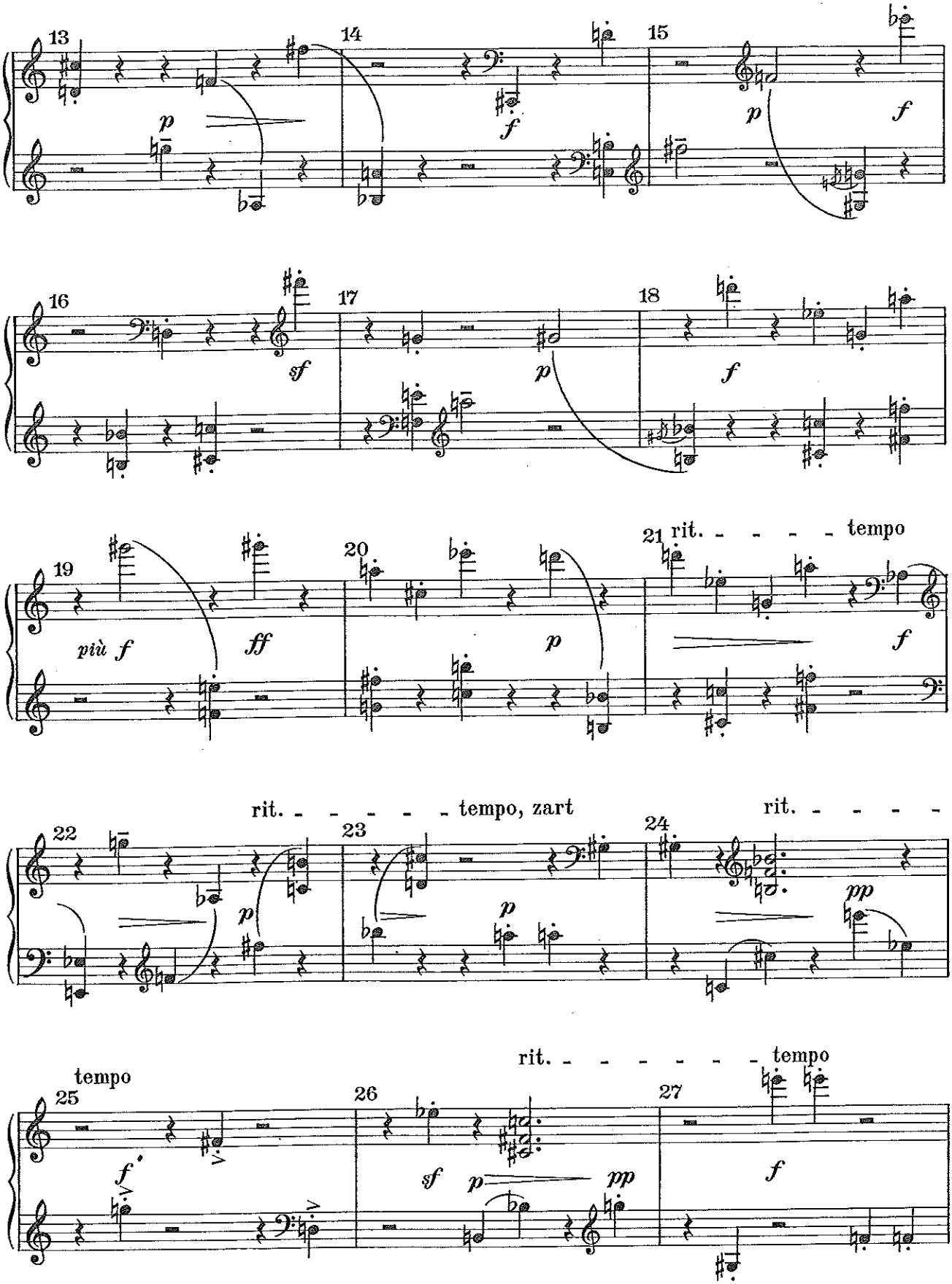
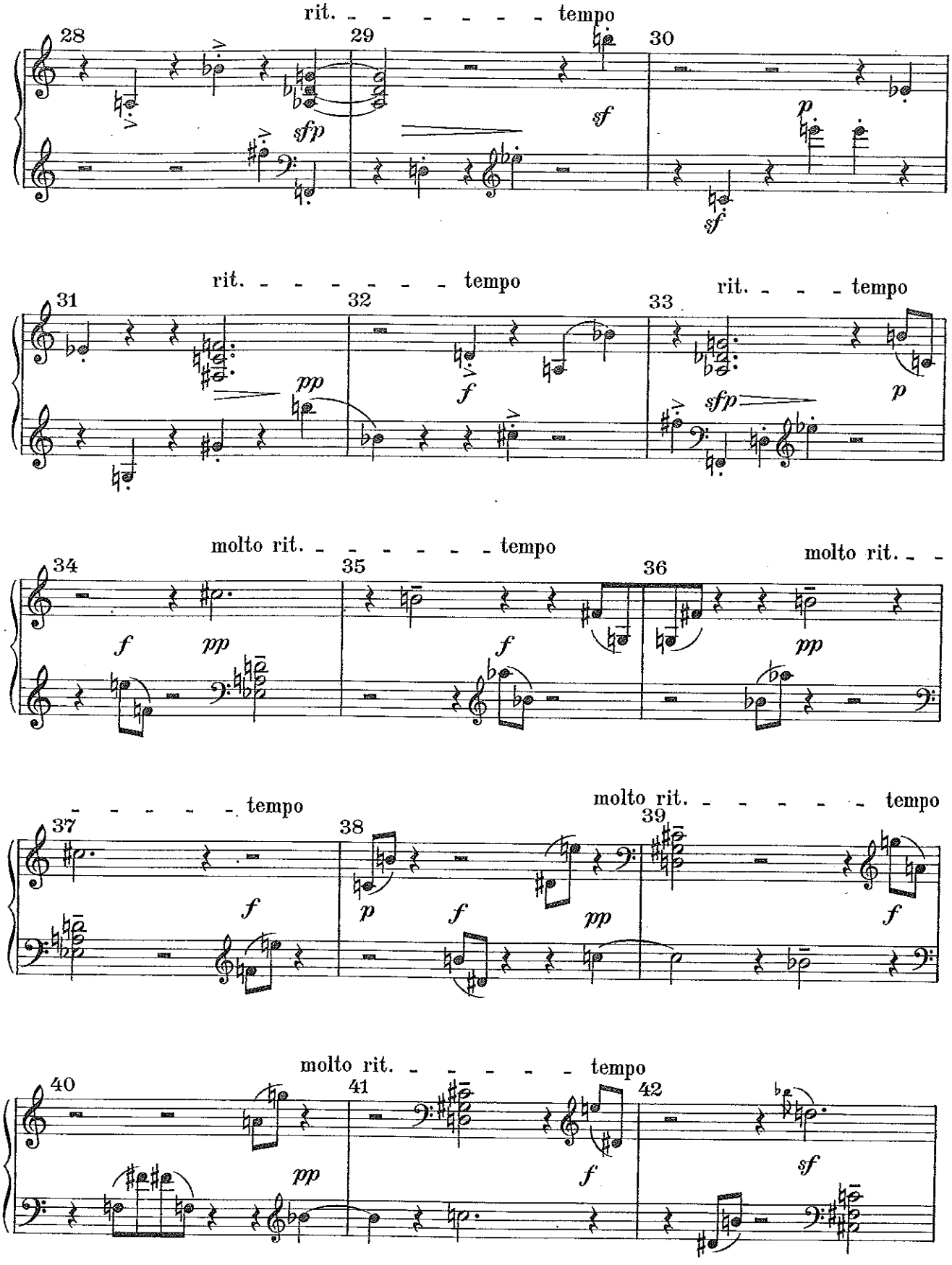
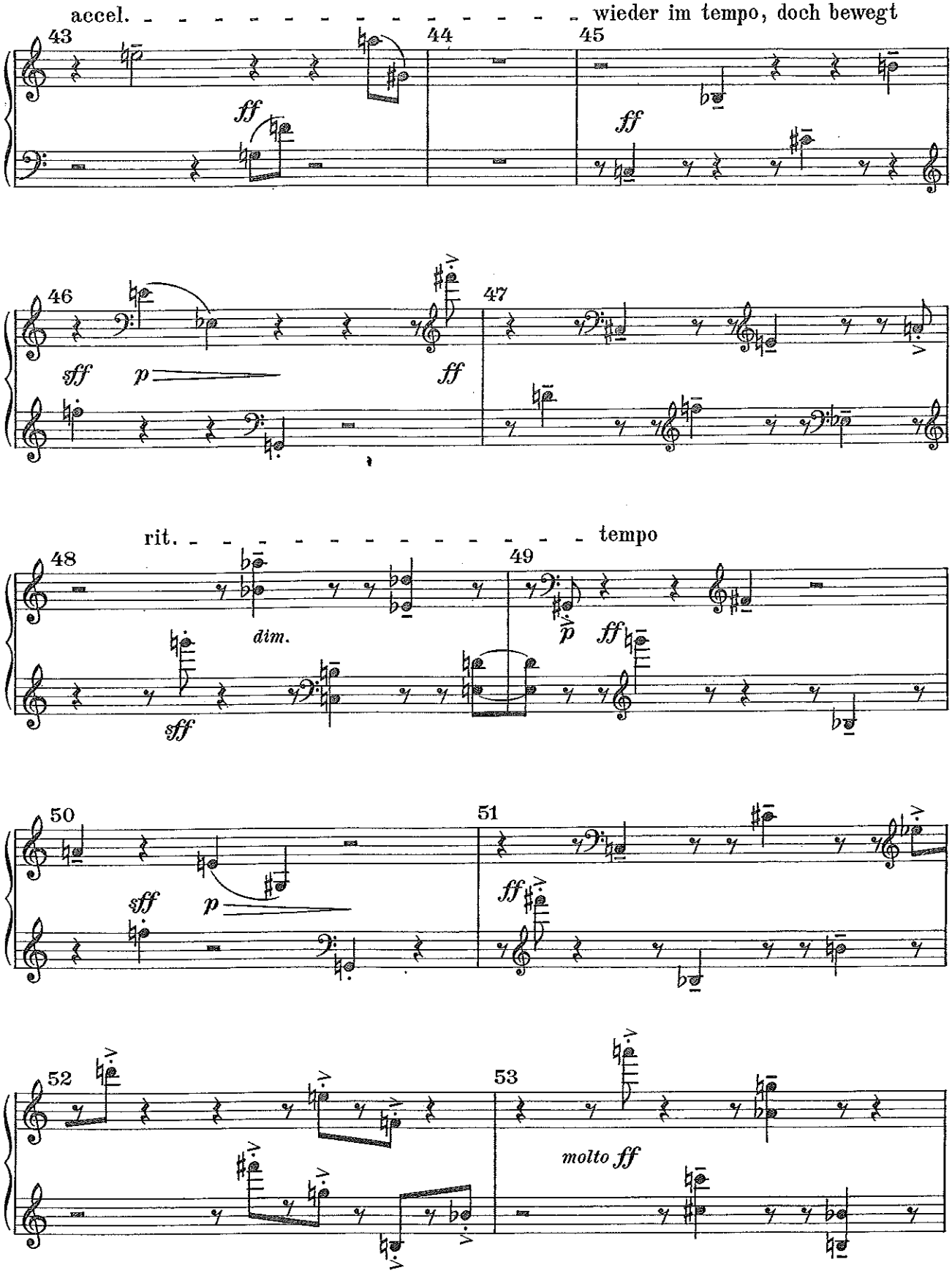
III

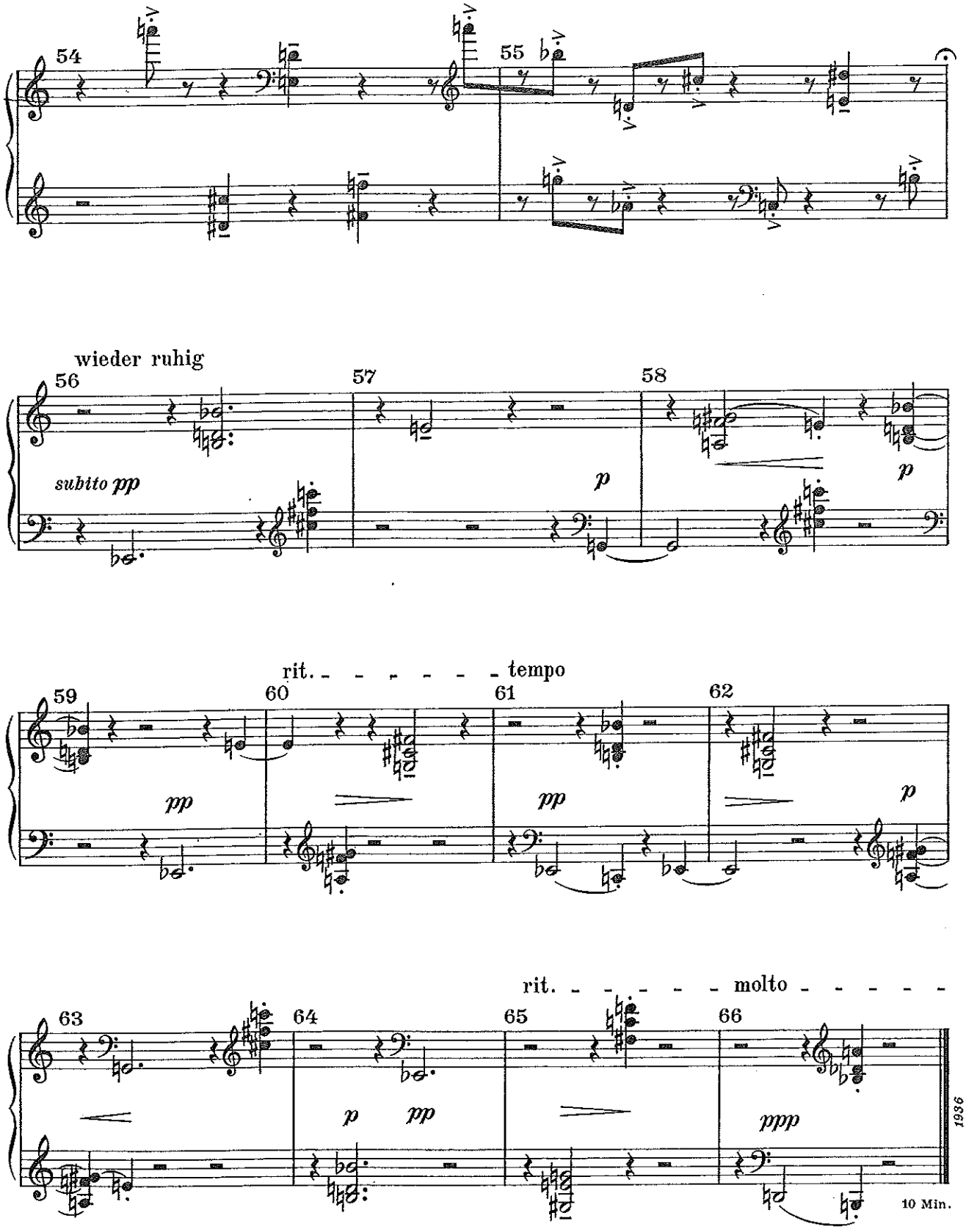

Ruhig fließend ♩= ca 80
1
2
3
p
f
4
5
6
p
f
7
8
9
f
p
f
10
11
12
rit. - - - - - - - - - - - - tempo
p
pp

U. E. 10881


13
14
15
p
f
p
f
16
17
18
sf
p
f
19
20
21
più f
ff
p
rit. - - - - - tempo
f
22
23
24
rit. - - - - - tempo, zart
rit. - - - - -
p
p
pp
tempo
25
26
27
rit. - - - - - - - tempo
f
sf
p
pp
f


rit. tempo
28
29
30
sfp
sf
p
sf
rit. tempo
rit. tempo
31
32
33
pp
f
sfp
p
molto rit. tempo
molto rit.
34
35
36
f
pp
f
pp
tempo
molto rit. tempo
37
38
39
f
p
f
pp
f
molto rit. tempo
40
41
42
pp
f
sf


accel.
wieder im tempo, doch bewegt
43
44
45
ff
ff
46
47
sff
p
ff
rit.
tempo
48
49
dim.
sff
p
ff
50
51
sff
p
ff
52
53
molto ff


54
55
wieder ruhig
56
57
58
subito pp
p
p
rit. - - - - - - tempo
59
60
61
62
pp
pp
p
rit. - - - - - - molto - - - - - -
63
64
65
66
p
pp
ppp
1936
10 Min.